ILLINIQATIGIIT:IMPLEMENTING A KNOWLEDGE BUILDING ENVIRONMENT IN THE EASTERN ARCTIC

By

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for the degree of Doctor of Education
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Alexander George McAuley
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Abstract

Between its creation in 1985 and the creation of Nunavut in 1999, the Baffin Divisional Board of Education (BDBE) worked to create an Inuit system of education in the fifteen eastern arctic communities that made up the Baffin region of the Northwest Territories. As a part of this effort to create a school environment that built on Inuit language and culture while preparing students to participate in an increasingly global context, CSILE/Knowledge Forum, a collaborative, network-based computer supported knowledge building environment, was implemented in a number of Baffin schools between 1992 and 2000. This implementation process brings together initiatives that juxtapose two theoretical frameworks. The first, Cummins' intervention for collaborative empowerment, underlies the BDBE's bilingual program development; the second, Bereiter and Scardamalia's emerging knowledge building framework, underlies the design of CSILE/Knowledge Forum. This thesis explores the intersection between these two frameworks through the implementation of CSILE/Knowledge Forum in Baffin schools. Through a combination of personal narrative and examination of CSILE/Knowledge Forum databases, the thesis argues that the intervention for collaborative empowerment brings to knowledge building a focus on the role that power

structures play in classrooms such as those in the Baffin where representatives of a dominant minority teach a majority of students from a different cultural and linguistic background. For its part, through its emphasis on collective cognitive responsibility, knowledge building brings a framework for educator self-examination and transformation that is critical to and lacking in the intervention for collaborative empowerment.

Acknowledgements

A project that takes as long to complete as has this one develops an equally long list of people who made it possible. Chief among them is Elizabeth Tumblin, whose enthusiasm, drive and willingness to share, question, and collaborate sustained and inspired the project throughout its life. Perhaps it's the Murphy heritage, but Elizabeth was always ready for things to go wrong, and ready to turn them into knowledge-building moments and move on when they did. Thanks are also due to Paul Meggs who laid the groundwork for the Iqaluit Millennium database after I had left Iqaluit and while Elizabeth was away for a year on leave. It was Paul's initiative that enabled us to catch a glimpse of the potential that would be realized a year later.

Although no longer in existence, the Baffin Divisional Board of Education provided a context that made possible initiatives aimed at creating powerful and relevant educational experiences in Baffin schools. Directors Chuck Tolley and Cathy McGregor provided the board-level support that got the project through its first few years.

Aside from their contribution as my supervising committee, Marlene Scardamalia, Jim Cummins, and Carl Bereiter at OISE/UT provided ongoing intellectual inspiration and challenge for over a decade. Somehow they managed to keep this within frameworks that can make sense and make a difference at the school level. Their belief in its value and continued interest and support helped keep this project alive and developing when it might otherwise have collapsed.

Also at OISE/UT, the efforts of the CSILE/Knowledge Forum research team (now IKIT) were instrumental in the success of CSILE/Knowledge Forum in the Baffin. Thank-you Mary Lamon, Nancy Smith-Lea, Ben Smith-Lea, Chris Teplov, Jud Burtis,

Earl Woodruff, Clare Brett, Jim Hewitt, Susana LaRosa, Ann Russell, and James McGuire. Thanks are also due to Marge Cappo and Eric Cooper at Learning in Motion who have provided support for many of the tweaks and changes necessary for CSILE/Knowledge Forum to support Inuktitut.

Entering the process as it neared its end, Thérèse Laferrière's generous comments as external reader and Elizabeth Smythe's as internal reader were greatly appreciated. Thank-you both for helping to bring this to a successful conclusion.

Closer to home, Kathleen has now seen the end of something that began the year she was born. Fiona has seen her patience, support, and advice finally bear fruit. My deepest thanks to both of you.

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This dissertation is dedicated to

Kathleen Alice McAuley

(1931-2001)

who would have loved to have seen it finished

and

Kathleen Ulluriaq McAuley

who did.

Chapter 1

Introduction

Suicide

Five years later the irony continues to haunt me.

I boarded the plane to Montréal through November weather in Iqaluit after three very hectic days meeting with teachers, helping to reconfigure local area networks, and installing software. Although tired, I was confident that the work would contribute to the success of the CSILE/Knowledge Forum[1] software that teachers were using in Grade 6 and junior high classrooms. Finally I felt free to turn my thoughts towards planning my contribution to a plenary presentation on "Communities of Knowledge Builders" at the first annual conference of the TeleLearning National Centres of Excellence. My portion of the presentation was called "Make-believe learning: Taking the virtual out of virtual reality," a title derived from the comment of an Inuk colleague who once told me that Inuit elders described what goes on in schools as "make-believe learning." Somehow my

[1] Short for "computer supported intentional learning environment," CSILE is both the name of the first generation of software intended to support collaborative learning over a LAN and a generic term to describe the original intent of the second generation of that software, Knowledge Forum. This thesis deals with implementations of both versions of the software. When the context requires distinguishing between the two, I will use their specific names. When a distinction between the two is not required, the more inclusive CSILE/Knowledge Forum term will indicate that the principles behind the software rather than the specific implementation are being stressed. The underlying metaphor for CSILE/Knowledge Forum is a knowledge creating organization. A collaborative database provides an online environment open to all members of the community. Contributions to the community take the form of text, graphics, and, most recently, multimedia notes. Software tools provide the capacity to link, annotate, comment on, and edit notes. They also help more novice members of the community structure their contributions in more expert-like fashion, and enable community members to repurpose existing contributions in the creation of new knowledge.

presentation had to depict the gulf between the elders' worldview and the worldview schools embody for an audience to whom Arctic classrooms were as exotic as almost anything on earth. It then had to demonstrate how CSILE and the concept of a knowledge building community was being used to bridge that gulf.

It occurred to me that a story written by a Grade 10 student from a small Inuit community at the north end of Baffin Island had helped me understand something of the extent of that gulf and might do the same for the TeleLearning audience. Writing about her first day at school, this student had described the trepidation she felt as she walked toward the building where "all the white people" in the community were. Her fear and uncertainty turned to delight, however, when she got to her kindergarten class and was greeted by her teacher, an Inuk, who would teach her in her native language, Inuktitut. Her fear of school alleviated for the moment, she eventually finished Grade 9 in her home community, attended high school in Iqaluit nearly 1,000 kilometres to the south, graduated from Grade 12, and got a good job. Her story has encapsulated for me the role of Inuktitut language and culture in making Nunavut schools places where Inuit students feel welcome and succeed.

I wish it were that simple and that I could leave the story there, my point made, much as I did at the conference. Tragically, that highly successful student committed suicide only a few years after graduation, a grim irony that would have marred the tidy equation pairing student success in schools with Inuktitut language and culture. The reality is far more complex. A second grim irony lies in the fact that at about the time I was getting on the plane to Montreal the brother of one of the students in the Grade 6 CSILE classroom in Iqaluit killed himself.

Suicide affects virtually everyone in a small northern community. They know or are related to the victim, or they interact directly with people who do. For that reason schools have set up fairly elaborate systems to help teachers and students come to grips with the trauma and grief and move on. This time, however, the teacher noticed that some members of the class were not moving on:

> With the suicide this week of the brother of two of the class/cousin to another, we talked as a class about what to do when something is upsetting/bothering you, i.e. other alternatives to suicide. Students were still talking about the topic with other students. One student mentioned to the CSA [Classroom Support Assistant] that she still missed her friend who committed suicide last year (Also only 14). That started me thinking that perhaps the students need more opportunities to discuss their thoughts/feelings, that is less threatening than a whole class discussion. As students are more motivated already to write on the computer than they are in their notebooks, I thought I'd take a gamble about introducing them to discussion notes... I say 'gamble' because it is a fine line between sensationalizing a suicide and allowing the opportunities for students to express their feelings/thoughts. (E. Tumblin, Note #30)

Having made this decision, the teacher entered the following problem as the beginning of a discussion note in the class' CSILE database:

> P[roblem]: Suicide: Thoughts and feelings
> Another young person has committed suicide. He was a brother, cousin, friend to several students in our class. What do you think about suicide? How do you feel about it? How can we help someone who is thinking about suicide? How can we help each other.

Over the next seventeen days students made eighteen contributions to the discussion note. They offered ideas about why people committed suicide and how to deal with it. They expressed sympathy for those who were close to the victim, and shared their feelings of grief about an alarming number of their own personal connections with suicide. One student contributed a computer graphic that illustrates a sense of horror, but the remainder of the notes are text-only, and the spelling mistakes, lack of punctuation and

capitalization, and erratic spacing indicate the effort needed to express thoughts and feelings in the face of the varying command of their second language, English, and a struggle with keyboarding.

Early in the discussion the teacher contributed that she, too, had known several people who had committed suicide and restated her initial request for suggestions as to how people could help each other. Late in the discussion she summarized student contributions and again asked for suggestions, but for the most part she simply observed the growing thread, allowing students room to express their feelings. She did, however, continue to record her observations in a separate portion of the database, her "Classroom Research Journal." There she noted things about the students' lives that hadn't come to her attention in the regular ebb and flow of classroom life:

> Anyway, through the discussion note that part of the class participated in today I learned that one student was a friend of the boy who died. This student was acting out a bit this week but I attributed it to the fact that his family had just moved. He is also a student who does not say much about his personal life. It is only through CSILE that I learned about his closeness with the deceased!
>
> ...'s note was the most thought provoking. This is a young lady whom I've felt for a long time has something deep-rooted bothering her. I've talked with her, so has the visiting counsellor. Neither of us has been able to pinpoint the source. Her note explains so much. ...As this is her first year being taught in English, she is a reluctant writer, This is the first time she has asked me to write down what she wanted to say so she could type it on the computer.

She also noted that the database provided the students with new, more positive ways to interact:

> The other benefit that resulted from this CSILE discussion is that two of the boys, who normally are quick to tease, passed on their sympathy to ... via their notes! Those two are possibly the least likely of any students in the class to express sympathy in front of their peers! CSILE gives them a bit of a distance so they can express their true thoughts! (E. Tumblin, Note #30)

And finally she reflected on the reasons for this happening:

> The students open up their hearts more to a computer discussion than they do to one where they are all physically sitting around together. The computer isn't as threatening, less of a risk. In effect, the computer provides a buffer zone so they can distance themselves a bit from what they are "saying".
>
> The kids understand about how open their thoughts are. That didn't seem to bother them. It was information they wanted/needed to share, but found this a less-threatening way to share it.

Significant student and teacher involvement in the Suicide topic of the CSILE database ended for all intents and purposes after about a month. This did not mean CSILE became less significant within the classroom, however. Focusing on topics ranging from science fair projects to aboriginal peoples and building on more typical classroom activities such as book-based research, it became an important medium through which students collaborated on and shared their discoveries. As they did in the Suicide topic, they struggled with a second language to express their understandings, questions, and feelings about topics about which they felt some kind of ownership. They also collaborated on individual and small-group investigations, using the online discourse medium to record and share information, ask questions, and comment on each other's work in a way that would have been impossible in the day-to-day flow of a regular classroom. For her part, the teacher continued to participate in the student investigations and the classroom research journal. The latter became a nexus for personal reflection, but also for ongoing collaboration with me, at that point on leave in Prince Edward Island from my job at the Baffin Divisional Board of Education. As a regular visitor to the database and a three-time in-person visitor to the classroom, I dialogued with the teacher and participated in student investigations. The most regular visitor to the database, I was

soon joined by parents, school board staff, politicians, and special guests that included Peter Gzowski. By the end of the school year what we had affectionately termed the "class from Hell" because of its challenging makeup of students of widely varying skills and socio-economic status all working in English for the first time, nearly torn apart by the impact of a suicide in November, had become one about whose collaborative research skills the teacher could comment after a ten-day absence, "They don't need me anymore!"

Traditional Culture and High Technology

In many respects the "class from Hell's" use of a CSILE/Knowledge Forum database to help address the aftershocks of a suicide in the community brings out the challenges and hopes inherent in the formal education system in the eastern Arctic. The students are Inuit and speak Inuktitut as their first language, yet their teacher is *Qallunat*[2] and despite many years in the north has a command of Inuktitut that falls far short of what would be necessary to navigate the intricacies of a discussion on suicide. That the students are forced to deal with suicide at all and that so many of them have had previous personal experiences with it indicates the depth of the challenges that they face on a daily basis: they are separated from their teacher by more than just language. Nevertheless, the teacher takes a calculated risk with the online discussion and the students respond thoughtfully and carefully, stretching the limits of their English to articulate what they

[2] *Qallunaat* (pl) or *Qallunat* (s) is an Inuktitut term for a non-*Inuk*, usually white, English-speaking and from southern Canada. *Inuit* (pl), *Inuk* (s), are the primary Aboriginal residents north of the treeline in Canada. *Inuktitut* is their native language. In the Baffin region of the eastern Canadian Arctic, Inuktitut is written in a syllabic script derived from the writing system originally developed for the Cree by missionaries.

need to say. And the creation of a safe space for dealing with the trauma of the suicide leads to an environment that also supports learning about other things.

It's probably fair to say that most if not all *Qallunaat* teachers in the Baffin recognize the size of the gap separating them from the majority of their students and that they deal with this recognition in variations on three main themes. One group chooses to ignore the complexities of the issues and seeks to create classrooms where they can focus on "just teaching." Often they find themselves wondering why their students drop out or become discipline problems. A second group, recognizing the issues and acknowledging that they deal with them, creates classrooms in which an overwhelming emphasis on self-esteem and feeling good undercut much of the potential for academic achievement. But a third group manages to create classrooms similar to the one described above. By various means they create spaces where student needs are recognized and dealt with appropriately, where student strengths are celebrated and built upon, and where both contribute to higher levels of academic achievement. Students belong, contribute and grow. Funnily enough, in most cases so do the teachers.[3]

The means by which these classrooms are created are as varied as the individual teachers and the students they work with and probably in most cases their existence is

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[3] Based on my own experience of Baffin classrooms, this three-part typology shows some parallels to Linda Winfield's rubric of teacher beliefs cited by Ladson-Billings (2001) in her discussion of culturally relevant pedagogy, particularly in terms of the "tutors," teachers who believe that at-risk students can succeed academically and that they as teachers have the responsibility and the ability to make it happen. In many respects these "tutors" are similar to the "supportive gadflies" that Kleinfeld (1972) identifies as being particularly effective as teachers of Alaskan Inuit students. Both involve the simultaneous support and challenge of students: I would argue that many non-native teachers require a similar "tutor" or "supportive gadfly" to support their own growth. As Sarason says, "If, as I have asserted, it is virtually impossible to create and sustain over time conditions for productive learning for students when they do not exist for teachers, the benefits sought by educational reform stand little chance of being realized." (Sarason, 1990:145)

The means by which these classrooms are created are as varied as the individual teachers and the students they work with and probably in most cases their existence is little known beyond those individual contexts. What distinguishes this particular innovation from most of the others, however, is its place in what might be considered to some extent a ten-year design experiment that explored the potential and challenges of the CSILE/Knowledge Forum technology and supporting classroom pedagogies in the bilingual, cross-cultural environment of the Canadian Arctic. Building on several previous initiatives involving the use of what was then state-of-the-art computer technology, at least in the educational field, to support cognitively challenging yet culturally relevant and engaging learning experiences, CSILE/Knowledge Forum provided participating educators a constant touchstone for reflection and growth. As an example of this process, the suicide episode described above is typical of number of similar examples, each involving the contribution of CSILE/Knowledge Forum to learning experiences that pushed the boundaries of what was considered possible or likely for students and in some cases educators within specific contexts. Beginning with a group of Grade 6 students struggling to move beyond the trauma of suicide, CSILE/Knowledge Forum provides a framework to move beyond a one-time vehicle to share feelings to achieve an ongoing role as a medium to support self-directed researchers who felt sufficiently accomplished to ask their next teacher why they couldn't use the computers to help them learn the way they had the year before. Other examples illustrate similar successes with such things as integrating students of diverse ability into viable learning communities, integrating community knowledge, bringing external resource people into classroom investigations, and supporting collaborations between students of different

cultural and linguistic backgrounds in joint investigations. While most of these examples could have been achieved with a variety of other software packages, CSILE/Knowledge Forum's deliberate design as a knowledge-building environment as opposed to a communication or a content presentation tool and its place in a distributed community of educators and researchers enabled it to maintain its central role.

Given these successes, one might expect that use of CSILE/Knowledge Forum might be widespread throughout the eastern Arctic. Unfortunately, this is not the case. Lasting effects will be described later, but factors ranging from teacher turnover to shifting administrative priorities to a school burning down have meant that no schools in the eastern Arctic currently use CSILE/Knowledge Forum. In some respects the ten-year trajectory of CSILE/Knowledge Forum in the eastern Arctic reflects problems of the sort that have challenged the dissemination of other innovations. On the other hand, the commitment to the educational use of computer technology manifested in this ten-year trajectory is grounded in the same vision that led to an Inuit-controlled education system in the eastern Arctic in the 1980s. In that respect both its rise and fall reflect similar patterns in a larger wave of innovation in curriculum and program development, inclusive education, and educational leadership that attempted to link the vision of a school system in which Inuit students integrated traditional knowledge, beliefs, and practices and the knowledge, skills, and attitudes necessary for the twenty-first century with the state-of-the-art in educational research. Although the impetus behind many of these initiatives has dissipated over time and some have disappeared, others have been subsumed by the programs of the Nunavut Department of Education created with Canada's newest territory in 1999.

successes have led to the development of an Inuktitut version of the software to support collaboration in Nunavut's first language. Second, it has inspired other jurisdictions and educators to reconsider the role of educational technology in general and CSILE/Knowledge Forum in particular in raising the bar in terms of what is considered possible for K-12 students, particularly Aboriginal students in remote communities working in English as a second language. One western Arctic school directly influenced by the Baffin experience maintains CSILE/Knowledge Forum as an integral part of its program and continues to contribute to the research and development effort.

Third, and perhaps most significant, is the research and development effort itself. Available only recently as a commercial product, CSILE/Knowledge Forum has always represented an investigation into how networked computers, cognitive science, and classroom practices might be brought together to create a powerful educational environment. Implementation in K-12 classrooms has therefore often involved educators and students as partners in the research effort. Until about 1994 those partnerships focused primarily on software design, classroom practices, and documenting impact on student learning. After about 1994, however, those partnerships increasingly involved a focus on an emergent educational concept, knowledge building. First brought into being about 1987 (Bereiter, 2002a), knowledge building synthesizes a critique of the demands on education by a society in which well-being is increasingly dependent on the creation and application of knowledge, a connectionist revision of the folk concept of the mind as a container, and evidence drawn from CSILE/Knowledge Forum implementations in K-12 classrooms, but also from industry, health care, and higher education. At its most fundamental level it represents a shift from the individual acquisition of knowledge, or

12 classrooms, but also from industry, health care, and higher education. At its most fundamental level it represents a shift from the individual acquisition of knowledge, or learning, to a collective cognitive responsibility for the creation of knowledge (Scardamalia, 2002). Now the focus of an international collaborative research endeavour coordinated from the Institute for Knowledge Innovation and Technology (IKIT) at the Ontario Institute for Studies in Education at the University of Toronto (OISE/UT), knowledge building continues to evolve and mature as a conceptual framework for the role of knowledge in the twenty-first century.

For nearly ten years the CSILE/Knowledge Forum initiative in the Baffin contributed to this research effort. A large portion of that contribution was instrumental in the sense that it addressed how CSILE/Knowledge Forum could address fairly straightforward educational needs. In this capacity the initiative documented innovative applications of CSILE/Knowledge Forum with respect to such things as integrating community resources, drawing on oral histories and traditional knowledge, and shared long-distance investigations, often with the involvement of a remote expert, or telementor. The Baffin's geographic isolation even served as something of a test of CSILE/Knowledge Forum's viability as a standalone software environment. As part of an international community of CSILE/Knowledge Forum sites, the Baffin contributed its innovations and experiences to the larger community and drew inspiration and new ideas in return through such things as participating in the Schools for Thought Summer Institute in St. Louis, Missouri and the online Progressive Curriculum Network.

At a deeper level, however, the strength of the Baffin's contribution to the research effort lies in the questions it raises and what it has to say about

CSILE/Knowledge Forum, and later knowledge building, in a unique cross-cultural environment. Participation in the research effort by countries as diverse as Finland, Hong Kong, and Singapore as well as Canada and the United States provide points from which to compare and contrast how different majority cultures take up CSILE/Knowledge Forum and knowledge building. Inner-city sites in Oakland, St. Louis, and Toronto have also provided insight into how CSILE/Knowledge Forum and knowledge building dynamics can play themselves out within majority-minority cultural dynamics. No other context, however, brings together what might simultaneously be considered in Ogbu's (1978) terms an autonomous minority by virtue of having settled land claims to become the world's largest private landowners and a *de facto* example of Aboriginal government within the new Nunavut territory on one hand, and a caste-like minority by virtue of disproportionately high rate of unemployment, underemployment, and school failure on the other. Implemented as part of a systemic effort to support the creation of schools that would enable "children while retaining their own language and culture [would] develop their English language and other skills to enable them to function effectively in Canadian society" (Baffin Divisional Board of Education, 1987, p. 5), CSILE/Knowledge Forum and knowledge building both contribute to the pedagogical framework (Cummins, 1986; Cummins, 1989) underlying that process and are informed by it.

Purpose and Outline of the Thesis

The intent of this thesis is to document, explore, and critically reflect upon the ten-year trajectory of CSILE/Knowledge Forum in the eastern Arctic. To some extent I am not sure of the wisdom of attempting this: smarter approaches might be the deep

analysis of a small number of thematically linked episodes, a specific focus on the evolution and use of a particular knowledge-building innovation, such as telementoring, or investigation of a particular adaptation of knowledge building to the eastern Arctic, such as its support for culture-based learning. On the other hand, an Inuk colleague once mentioned that she could not learn to cut out the pieces of a mitten unless she knew what the finished article was supposed to look like. Like her, I feel the need to understand the whole before I can make sense of the parts and understanding that whole comes through expressing it in a manner accessible to others. I feel that a cohesive and comprehensive overview of the issues, challenges, and decisions specific to our context may have relevance to others interested in implementing knowledge building technologies and pedagogies.

Although the principles, technologies and pedagogies necessary for knowledge-building classrooms have been evolving in conjunction with work with teachers and students over the past seventeen years or more, only three other contexts have seen efforts to establish knowledge-building classrooms that have approached ten years' duration. Only one of those contexts has involved as many different teachers and schools as the Baffin, but it has not had the same geographical stretch, nor has it made the same effort to maintain a cap on student:computer ratio. Documentation of the Baffin's process may therefore be useful as a contribution to the overall knowledge-building initiative. Finally, because of its longevity, the group working with knowledge-building in the eastern Arctic was able to both test knowledge-building innovations suggested by other sites and develop new ones. Documenting these may provide guidance or inspiration to future initiatives.

The following question provides a focus for the exploration:

> To what extent can CSILE/Knowledge Forum technology and knowledge-building pedagogy contribute to the reconciliation of traditional Inuit beliefs and values with the requirements of a modern school system to address the needs of Nunavut in the 21st century?

Exploring this question takes place in two main stages. The first teases out implications of the question by exploring the personal, educational, and theoretical stories that led to the implementation of CSILE/Knowledge Forum in the Baffin to begin with. It acknowledges that the use of CSILE/Knowledge Forum in the classroom takes place within and must be articulated with the larger socio-political and educational context. Because life in the far north will be foreign to many readers in terms both of the microworld of the classroom and the macroworlds of political, economic, and social change, and because my involvement with a CSILE/Knowledge Forum project in the Baffin grew out of ten years experience as a northern educator, Chapter 2 explores the roots of the project from my personal perspective. It focuses particularly on the challenges facing a *Qallunat* teacher in an Inuit environment and the educational adaptations and innovations that help address those challenges. Innovations involving computer networking figure prominently as it was the connection between these and *Piniaqtavut*, the K-9 program of studies developed in the Baffin to reflect an Inuit world view, that ultimately led to CSILE/Knowledge Forum.

Chapter 3 builds connections between this perspective and the larger educational and theoretical contexts and situates knowledge-building and knowledge-building technology within it. In particular it looks at Cummins' (1989, 1996, 2000) intervention for collaborative empowerment, the framework that provided much of the theoretical justification for *Piniaqtavut*, and knowledge building. Life on the frontier brings together

people and ideas that would otherwise never connect and the intersection of the intervention for collaborative empowerment and knowledge building in the implementation of CSILE/Knowledge Forum in the Baffin is an example of this. In a sense it is an academic cross-cultural encounter that echoes the Inuit-*Qallunaat* encounter embodied in the educational system and, I argue, a mutually beneficial one.

Chapter 4 moves from the theoretical intersection of the intervention for collaborative empowerment and knowledge building to the practical. What would such a theoretical intersection look like in practice? Would theoretical benefits manifest themselves in practice? Beginning with a synthetic version of a day in the life of a Baffin CSILE/Knowledge Forum teacher to provide an overview of interactions at the classroom level and of the kinds of innovations the project generated over the ten years of its life, it then focuses on the kinds of interactions that the classroom pedagogy fostered in the database. It draws connections throughout to both the intervention for collaborative empowerment and knowledge building, concluding with what might be described as a cross-cultural knowledge building school in which to a large extent the intervention for collaborative empowerment and knowledge building are lived as much as they are talked about.

Unfortunately they only lived there for a year. Although struggling for a few months into a second year CSILE/Knowledge Forum and knowledge building died at that last school just as they were demonstrating what is possible in a very challenging environment. It's tempting to dissect what went wrong, but Chapter 5 attempts instead to reconnect what was learned through what succeeded to what survives, specifically the ongoing contribution of knowledge building theory and CSILE/Knowledge Forum as the

computer-based embodiment of that theory to equitable education in an increasingly interconnected and diverse world.

Chapter 2—A Personal Perspective

There are in our existence spots of time,
That with distinct pre-eminence retain
A renovating virtue, whence--depressed
By false opinion and contentious thought,
Or aught of heavier or more deadly weight,
In trivial occupations, and the round
Of ordinary intercourse--our minds
Are nourished and invisibly repaired;
A virtue, by which pleasure is enhanced,
That penetrates, enables us to mount,
When high, more high, and lifts us up when fallen.
This efficacious spirit chiefly lurks
Among those passages of life that give
Profoundest knowledge to what point, and how,
The mind is lord and master--outward sense
The obedient servant of her will. Such moments
Are scattered everywhere, taking their date
From our first childhood.

William Wordsworth, *The Prelude,* Book Twelfth, 208-225.

On September 3, 1982, at the end of my first week teaching at the Gordon Robertson Education Centre in Frobisher Bay, Northwest Territories, now Inuksuk High School in Iqaluit, Nunavut, I found myself at a staff picnic at Sylvia Grinnell Park, just outside of town. A group of us *Qallunaat* teachers stayed behind after the picnic, settled around a campfire made of old shipping pallets and talking, mostly about education in what for me was a very strange new world. As the sun set in the west, it turned a bank of low hanging clouds an electrifying combination of blue and deep pink. Almost simultaneously, a full moon a deep hue of orange-pink rose in the east looking three times its normal size. Although the experience was sufficiently affecting for me to describe it in a journal entry a few days later, it was years later that it came back to me as a "spot of time" that captures the essence of being a *Qallunaat* teacher in the eastern arctic. For that brief

interval the distinction between sun and moon, east and west, dawn and dusk blurred and the little group of teachers around the campfire seemed to occupy a sheltered space somewhere between these dichotomies, just as it seems to me now that we were working in a privileged space between two cultures. However visually stunning and evocative, the image is also problematic: why are there no Inuit in this charmed space?

In this chapter I wish to explore the relationship between this image and the anecdote that started the previous chapter. It seems to me that CSILE/Knowledge Forum contributed to the creation of a version of this charmed space in which the *Qallunaat* teacher and Inuit students could relate in different, more meaningful ways than might otherwise have been the case. I am going to explore this from a personal perspective, outlining some of the experiences and thought that led me to believe in the potential that CSILE/Knowledge Forum might have for the cross-cultural educational environment of the eastern arctic.

Renegotiating the classroom drama

I knew very little of this context when I went north to Iqaluit (then Frobisher Bay) in 1982 to take a position as one of two senior high English Language Arts teachers at the only senior high school in Canada's eastern Northwest Territories. Whether the result of naive idealism and an urge for an exciting career or the scarcity of teaching jobs in southern Canada at the time and an unwillingness to send out dozens of unacknowledged resumés and wind up substitute teaching, I had given serious consideration only to teaching in the north or with CUSO, the Canadian University Service Overseas. My father had worked with National Parks and I had grown up in several locations across

Canada, many of them small and relatively isolated, but both of these choices required that I give very serious thought to real alternatives to what had been primarily a privileged, white, middle-class Canadian upbringing. Preparation for CUSO in particular included a number of cross-cultural information sessions in which I was challenged to see that my perceptions were not the only way of perceiving the world and that, "Until you can see through the rules, you can only see through the rules." (Ross, p. 4) Reading I did to extend this understanding with respect to Aboriginal cultures in general and the Inuit in particular once I had finalized the decision to go north tended to be too general to be particularly helpful (Brown, 1971), (Valentine & Vallee, 1968). More specific guidance came in the section on the philosophy of education in a Northwest Territories' publication included in an orientation package for new teachers in Canada's Arctic:

> Good pedagogy tells us that as an individual, and as a member of a particular ethnic or cultural group, the student functions best if full use is made of the traditions and expressions which are integral to home and family, and therefore to student well-being. Traditionally, in schools, students have been exposed to the abstract, academically-oriented curriculum while the community involved them in cultural experiences, rich and realistic, and contrasting sharply with what the school had to offer. Schools in the Northwest Territories must reflect reality.
>
> This philosophy has particular significance for educators in our system, since at this time the vast majority of them come from outside the Northwest Territories. They have little understanding of the culture of most of the students they will be teaching, or of the people with whom they will be living in the northern communities. Inevitably, even through the best of intentions, they design their teaching strategies on the basis of their own cultural backgrounds. Elements of the culture of their students are viewed as problems to be overcome, rather than being valuable and integral parts of those students. Educators must become aware of the various elements of the new cultural group, and develop an understanding and appreciation of those differences. Are you prepared to make the effort to understand and appreciate the cultural differences you will encounter if you come to the Northwest Territories? Are you willing to make changes in your attitudes, beliefs, teaching methods, etc., in order to properly serve the peoples of the Northwest Territories? (Government of the Northwest Territories, ND)

A regional document also accompanying the orientation package expanded this challenge with explicit reference to Inukitut, the first language of the majority of residents in the Baffin region:

> Inuktitut, the language of the Inuit, is one of the strongest Amerindian languages in use today. Whereas many other native American languages face the danger of extinction within this generation, the speakers of Inuktitut have a strong base on which to plan for the survival and healthy development of their language. In most communities of the Baffin Region Inuktitut is the first and often only language home and remains the language of common currency in everyday transactions. Consequently, the majority of children have Inuktitut as their mother-tongue when they first come to school. Because this is so, instruction in the early grades is primarily in Inuktitut. Subsequently the Region advocates bilingual school programs with both Inuktitut and English languages being used for instructional purposes. Our philosophy is that Inuktitut continue to be a vital part of school programs in all subject areas and at all grade levels. (Weaver & Wilman, 1982)

Even more specific guidance came in the form of a letter from the regional education office:

> New teachers will find that the educational expectations of students and their parents will not parallel those of their southern counterparts. A growing concern in the minds of many people about the rapid break-down in traditional values and loss of traditional skills has resulted in a strong call for more relevant education and greater regard for the traditional values.
>
> These aims may not always fit well with the southern conception of a "good education" in which emphasis on academic skills and the achievement of good grades is paramount. Teachers must be prepared to understand the cultural factors involved and recognize that developing skills in cultural activities such as hunting, survival and domestic activities are relevant educational activities. Teachers are advised to spend at least the first year listening and learning before formulating strong opinions about the north and northern education. (Colbourne, 1982)

Collectively these latter three documents emphasize the discontinuity between the language, culture and expectations of southern educators and those of the majority of parents and students in the Baffin. They put the onus on the educators to understand this discontinuity and to suspend their own perspectives sufficiently to adapt their pedagogies

to better reflect the perspectives of their students, thereby creating more successful learning experiences.

This perspective was reinforced, when, less than four months after deciding to go north, I found myself in an orientation session for new teachers in Iqaluit. There, too, I found myself urged to recognize that I was going to have to change the way I looked at the world, or at least to enlarge it, if I was to teach effectively. This time the message was embedded in lessons in basic Inuktitut, the first language of what was to be the majority of my students, and in presentations about the centrality of Inuktitut and Inuit culture in local education. However, knowing that *kullu* is the Inuktitut word for "thumb" and that your preconceptions about teaching are inadequate for the north does little to prepare you for acting on that knowledge in the process of preparing for eight different classes a day.

In 1982 about 130 of the Gordon Robertson Education Centre's approximately 350 students came from various small settlements from across the Baffin and Keewatin districts of the Northwest Territories. They stayed in a student residence converted from a Strategic Air Command barracks purchased for a dollar by the Canadian government. Virtually all residence students spoke Inuktitut as their first language—those from Igloolik had had their first regular exposure to English broadcast television only that year. Some were as young as fourteen and many were away from home for the first time, sometimes thousands of kilometres, with long airplane trips at Christmas and the end of the school year the only way back.[1] We were lucky to finish the year with half the

[1] There is the wonderful story of the students from Sanikiluaq, a small island in Hudson Bay, just north of James Bay and normally a two-day trip by air from Iqaluit, who took an unscheduled visit home. Upon hearing that a charter flight was going to their community, they signed out of school, went to the airport, and somehow convinced the

residential students that started. Equally dismaying was the number of local students who dropped out.

Nothing in my formal training—certainly not my Master's in English, nor even my extra qualifications in teaching English as a Second Language, both reasons I had been hired in the first place—prepared me for things like the large percentage of Grade 8 students who apparently couldn't read or for the fact that there didn't seem much of relevance for them to read anyway. Or for the Grade 11 Communications class that according to one brave student, didn't "know how to get into groups" for discussion when instructed to do so, and then, when arranged into groups, didn't "know how to discuss." Perhaps most dismaying, though, was the high proportion of Inuit students relegated to general-level classes because of their English second-language status and the substantial numbers of Inuit students who faded to the back of mixed classes and disappeared, while their *Qallunaat* peers, who made up something like twenty per cent of the school population and tended to be concentrated in the academic stream at the senior secondary level, floated along on their native-language proficiency.

Over time, better understanding of the educational experiences I could expect students to have allowed me to make use of appropriate ways of structuring more sophisticated interactions. I learned to listen to and learn from teachers who seemed able to engage all their students and draw the best out of them regardless of their individual differences: I also learned to try to ignore those who seemed to have given up or to assume that the students didn't care or couldn't do it. Things like week-long March hunting trips by snowmobile at minus 35° Celsius gave me an appreciation of things that

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pilot that they had the school's permission for a short visit home. They flew down for their visit, then returned to face the consequences.

the students could do that wouldn't normally show up in the classroom, things like the enthusiasm and skill with which they pitched in to help tie down the *qamutiiq* (long sleds pulled by snowmobiles) for travel, or leapt off to help guide them through the tortuous pressure ice that separated the flat sea ice from the shore. I took more Inuktitut lessons (though I never became very proficient). I took courses in traditional Inuit skills offered by the local adult education centre and taught by Inuit. I learned to build an igloo (again, not very well), and a *qamutiq* (that, neither). I shot my first caribou, skinned it, butchered it, and, over the next few months, ate it.

As I learned something of what traditional Inuit culture entailed, I also developed basic competency as a teacher. With basic classroom management under control, reasonable comfort with the curriculum, and an ever-increasing respect for what the students could do, by about my third year teaching I was able to look more systematically for ways to bring coherence to what had been to some extent a haphazard, hit-and-miss attempt to structure classrooms that would engage all students to the best of their abilities. Key to this was being asked with the Music and Art teachers to co-develop and co-teach a Grade 10 course called "Related Arts". With only the most sketchy of formal expectations ("Do a Christmas play!"), one colleague brand new both to the north and teaching, and the other two of us new to this assignment, we found ourselves falling back onto what the students knew, were interested in, and wanted to do. We then pooled our backgrounds in music, visual art, and drama to help shape these into learning experiences. Often the results were workshopped productions of story lines developed from student ideas and presented in both English and Inuktitut. We knew we were onto something by the attentiveness of the audiences—arctic community audiences give

attention only when they genuinely feel it is merited—the enthusiasm of the applause and the students participating. As one student said about a particularly successful production, "And you know, the best thing is we did it all ourselves!"

During a summer course in 1986 I found a coherent way to look at the success we had stumbled onto in Related Arts in Brian Way's (1967) framework for developmental drama. By putting the individual student at the centre and moving out through progressively larger interactive groups along six developmental axes, it provided a means through which a teacher could think about structuring drama that accommodated students' interests and capabilities and the teacher's comfort level. In our case that meant acknowledging the linguistic and cultural differences that existed between our students and ourselves, focusing on their interests and ideas through a brainstorming process, and developing appropriate musical, artistic, and dramatic explorations and expressions of those interests. In effect, Way's framework for developmental drama created a space in which the drama of the classroom could be renegotiated, although that way of describing it didn't come to me until long afterwards.

I taught Related Arts from 1984 to 1987 and those three years will always seem to me an example of Piaget's (1973) aphorism that "to understand is to invent." The opportunity and challenge of creating a course relatively unencumbered by the restrictions of a strict curriculum allowed a space in which the fundamental attributes of teaching and learning could be questioned, tested, and reconfigured. While that was in many ways a very uncertain and scary place to be, fraught with the possibility of failure (and we did have a number of those!), it was also hugely empowering for teachers and students alike. When I left the classroom at the Gordon Robertson Education Centre in

the summer of 1987 to become the Senior Secondary Programs Consultant for the Baffin Divisional Board of Education, the idea that what could and should take place in a classroom is negotiable went along with me.

Renegotiating the Secondary Drama

When I started teaching at the Gordon Robertson Education Centre (or GREC as it was called) in 1982, teachers were encouraged to eat dinner with students at the *Ukiivik* residence and help out with the study hour afterwards. It was a chance to meet and chat with students, some of them almost as far from home as I was, in a less formal atmosphere than the classroom and to experience something of what the students did in their residential life, and to learn about how they related to their schoolwork on a more individual basis than was allowed in classes. My first meal at *Ukiivik* encapsulates for me the problematic aspect of the residential system—on the one hand the main course of caribou stew was intended to cater to the students' taste for "country food." On the other, the only identifiable meat I recollect in my dinner was the fly I found in my salad. While the residential system did provide some students in the eastern arctic with a means to secondary education beyond what was available in their home communities, it did not meet the needs of the majority.

The 1982 report of the Special Committee on Education (Government of the Northwest Territories, 1982) proposed to address this challenge by placing Grades K-10 education under the authority of newly created Divisional Boards of Education and Grades 11-12 under the authority of an equally new Arctic College. Perhaps because GREC already offered Grades 7-12 under one roof and Pangnirtung's experience had

demonstrated that at least one senior secondary grade (Grade 10) could be offered in a small community, by 1985 the just-created Baffin Divisional Board of Education had already embarked on an aggressive agenda to extend high school programs to most if not all Baffin communities. In 1985 Pangnirtung and Iqaluit were joined in their senior secondary school offerings by three additional communities, in 1986 by one more, and by another in 1987.

Small community high schools are not without their own challenges. Students who did well in Pangnirtung's "Settlement 10" program and elected to attend GREC, for example, found themselves required to take the "real" Grade 10 program offered in Iqaluit before proceeding to Grade 11. Even today with high school programs in virtually every community, there are still those who would argue that small community high schools can never be as good as a "real high school" with "real" standards. To address this concern I was hired as a high school teacher with a sufficient combination of innovative approaches and student success that might possibly help address the challenges faced by the small community schools. Like the Related Arts course, the programs these small schools hoped to offer could be seen as both a challenge and an opportunity. With respect to the former, to address the concern about standards they were expected to cover essentially the same curriculum objectives as did Sir John Franklin High School in Yellowknife, once waggishly described as the "best high school in Alberta" for the strength of its adherence to the Alberta Curriculum approved for use in the Northwest Territories. The Alberta curriculum and its supporting materials were completely in English and reified the language and culture of the teachers, all of whom were *Qallunaat* except those few teaching Inuktitut or involved in Inuktitut cultural

programs. The problematic nature of the resources and instruction was exacerbated by the fact that one of the effects of community high school programs was retention of students who might not have been seen with sufficiently strong English or academic skills to attend high school in Iqaluit. More students stayed in school longer, but the range of skills was wider and teachers had to learn to accommodate this increased range across the full range of subjects, much as in an old-fashioned one-room schoolhouse. Not many teachers had personal experience with this kind of instruction, especially at the high school level, and not many teacher preparation programs focused on it.[2]

On the other hand, because they were breaking new ground they created a sense of possibility, a feeling that everything old was, or could be, new again. Teachers had to learn as they went, adapting, learning, and innovating. Part of my job as I travelled the region was to share my experiences as an educator, including those with Related Arts, and to provide a systemic stamp of approval that high standards and non-traditional instructional methods were not only not mutually exclusive, but rather mutually supportive. Another part of my job was to collect and disseminate local innovations that seemed to have promise for wider use. One of these was a six-week, cross-grade, instructional block that focused on the arts and which saw pre-Christmas attendance at one community high school soar from a typical fifty per cent to over eighty per cent. Another broke down the senior secondary/elementary school dichotomy by integrating senior high students into the multi-grade family groupings around which the rest of the

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[2] The community high school model that originated in the Baffin demonstrated sufficient student success and public support to become a model for the entire Northwest Territories. Today, seventeen years later, a student can receive a Grade 12 education in virtually every community in the Northwest Territories and Nunavut. Many of the challenges and much of the skepticism remain, however.

school was structured. Local and regional teachers' conferences, a regional senior secondary schools newsletter, and telephone and facsimile connections extended the impact of personal community visits, but the growing number of programs and teachers made it progressively more difficult to sustain and disseminate innovation. How could the connection be sustained and extended? It was this last challenge, that of enabling communication that would sustain innovation in the development of a truly responsive senior secondary education system in the Baffin that drew me into the then brave new world of computers and computer networking.

Computer Technology to Support Baffin Education

Computers were first introduced to Baffin educators through a combination of demonstrations and inservices between 1980 and 1982. The first computer purchase, an Apple II, was installed in the high school in 1982 with twelve others distributed to schools across the region in 1983. A regional policy to control microcomputer acquisition was developed, a preview library established, and by the late fall of 1983 a regional survey documented widespread positive impressions of computer use. According to the survey, computers were primarily used by students for remediation and enrichment in the areas of Language Arts and Mathematics. Major issues of concern included cost, lack of access, and the potential to detract from other school programs. (Stuempel, 1987) Although the results of the survey seem quite impressionistic and the 100% return rate suggests it was narrowly distributed, support for computer acquisition was extended and by 1984 GREC teachers and students had access to a lab of networked Apple II computers.

Prior to going north my experience with computers had been restricted to the struggle to write programs in FORTRAN and standing in line for an hour with a pile of punch cards to find out that I had misplaced a comma. Although more enjoyable, the couple of hours with "Lemonade Stand" on an Apple II during my teacher education program at Queen's University in 1982 provided little of any real utility other than a positive experience. Early experiences in the high school lab were equally inauspicious. Despite taking advantage of every possible computer inservice session, I could not get the computers in the lab to do anything useful for me. Moreover, although I encouraged senior students to use the computers for word processing and gave them class time to do so, and most of them had had at least one course in computer literacy, observation convinced me that they found the process only scarcely less frustrating than I.

All of that changed with my first exposure to the Macintosh computer in 1985. The "what-you-see-is-what-you-get" point-and-click interface and a half an hour to play around made it possible for me to actually do something useful. I bought my own Macintosh that spring and later that year I invested in two pieces of software, a BASIC interpreter and something new called a "page layout" or "desktop publishing" program. The latter was actually useful and enjoyable to use, and by the next year I was desktop publishing a small Language Arts newsletter for staff at the high school in addition to using the graphics and word processing programs to prepare instructional materials and a spreadsheet for marks.

A second revelation occurred in the spring of 1987. While visiting one of the program consultants at the Divisional Board office, I noticed text rapidly scrolling up the screen of her computer. Actually, although it seemed rapid at the time, I found out that I

could almost keep up if I tried to read it. It turned out that I was seeing the output of an electronic mail system, iNet 2000, to which all schools in the Northwest Territories had been given access but which had no direct relationship to today's Internet. Through a 1,200bps modem (the current modem standard is 56,000bps) and access to a 1-800 number, the iNet allowed educators to access email only seconds after it had been sent. What's more, something written up in a word-processing program could be imported into an email message for almost instant transfer and the recipient could print it off if they wished or suggest changes by entering them directly into the text. Commonplace now, but in 1987, given that mail quite often took literally months to find its way between settlements, this had truly revolutionary potential, at least assuming that you might actually have a reason to communicate with someone in another settlement. It wasn't long after taking over the role of Secondary Programs Consultant that I found myself using the iNet with colleagues from across the region to share resources and facilitate input on collaborative projects. Perhaps more significantly, with the cooperation of the Department of Education in Yellowknife as well as the Divisional Board the iNet could be used to support student learning in very small schools, something demonstrated in the initiative of a Broughton Island teacher who used the iNet to establish a connection between his students and their partners in an exchange program on Prince Edward Island.

The need to innovate to create challenging and appropriate learning experiences for high school students in very small schools scattered across the eastern Canadian arctic and for pedagogies to bridge the multidimensional gulf between teachers, curriculum and students came together with these simple examples of the growing accessibility of computers and computer-mediated communication in three ground-breaking initiatives

between 1988 and 1992. The Baffin Writers' Project, the Apple Global Education Network, and the regional *Takujaksat* electronic bulletin board system integrated each of these three elements in varying degrees and set the stage for the exploration of the computer supported intentional learning environment (CSILE/Knowledge Forum) that began in 1992.

The Baffin Writers' Project: Desktop publishing and local voices

As is true of many things in the north, the Baffin Writers' Project had its origin in the chance encounter of two people, in this case the principal of Takijualuk School in Pond Inlet on the northern end of Baffin Island, and David Young, a writer and then chair of the Canadian Writers' Development Trust. David mentioned that he felt Canadians didn't know enough about the far north of their country, that Canadian writers were the best qualified to tell them about it, and therefore he was looking for support for a northern Canada writers-in-residence program.

The old saying that "when you've been in the north six weeks you're an expert and when you've been there six months you write a book" went through my mind as the principal told me of this proposal and a closer look at its first draft did little to reassure me. It seemed to me that the voices that needed to develop and be heard were those of northerners themselves, the people who were born there or had made a long-term commitment. The BDBE's Inuktitut book publishing program was demonstrating that local people could write and illustrate books for use in Baffin schools, but the process of bringing books to print was lengthy. The BDBE's commitment to bilingual literacy and the growing number of small high-school programs required both relevant reading

material in Inuktitut and English and meaningful ways to engage students in the writing process. The recent development of the LaserWriter meant that the capability to produce near-professional looking print publications could now reside in remote arctic communities and the Macintosh's facility with fonts meant those publications could be produced in the syllabic orthography in which Inuktitut is written in the eastern arctic. Working with representatives from small high schools in Pond Inlet, Cape Dorset, Clyde River, and Igloolik and Milt Petruk, Executive Director of the Apple Canada Education Foundation, David Young and I developed a model which would integrate workshops by visiting writers, school and community literacy programs, and small desktop publishing centres in a process for local writer development and publishing. A proposal to the Apple Canada Education Foundation was successful in securing the necessary hardware, the BDBE became an Apple Centre for Innovation, and the first writers' visits took place in the fall of 1988 (McAuley, 1990; Freeman, 1990).

Between 1988 and 1992 the Baffin Writers' Project and its flagship student magazine, *Titirausivut*, demonstrated that students could make effective use of what was at the time state-of-the-art desktop publishing software and hardware to produce several issues of a regional literary magazine in Inuktitut and English annually. With editorial responsibilities rotating between writers' groups at each of the four schools, *Titirausivut* was laid out and published from student submissions from across Baffin Island. Special highlights were the November 1990 issue which appeared entirely in Inuktitut and the Fall 1991 issue from Igloolik that won an award for student publishing from the National Council of Teachers of English in the United States. As a principal at one Baffin school

told me later, students dropped all other reading when the latest issue of *Titirausivut* arrived (J. Tompkins, personal communication, 1989).

Although workshops by visiting writers proved financially unsustainable for more than two years, they did catalyze interest in the project and stimulate interest in student writing and publishing that lasted at least another two. With the ongoing support at the community level, mostly from teachers in schools, the project scope expanded to include student conceived, designed, and published material ranging from the *Inuktionary*, a basic English-Inuktitut dictionary sold at local Co-Op stores, to calendars that included pictures and biographies of local elders, to a manual of snowmobile parts, to a collection of student-written plays in Inuktitut. Teachers in schools other than the original four also took up the model.

As well as demonstrating the potential of student-centred writing and publishing as part of the process to validate and contribute to local language and culture, the Baffin Writers' Project provided new insight into potential uses of wide-area computer networking. During a spring 1989 visit to Clyde River by Fred Wah, a writer involved in the pioneering online literary magazine, *Swift Current* (Davey & Wah, 1986), students from across the Baffin logged into the chat facility on the iNet 2000 system and took turns contributing to an online collaborative story that was later edited for publication in the next edition of *Titirausivut*. Despite student enthusiasm for the writing promoted by this type of interaction, the relatively obscure interface of the iNet 2000 system and the difficulty with which it handled files other than ASCII text impeded widespread student use. It remained for another Apple Computer innovation to deal with this challenge.

The Apple Global Education Network: The Macintosh marries computer mediated communication

Although primitive by the standards of today's graphical browsers and sophisticated interactive broadband Internet applications, in 1988 the Apple Global Education Network (AGE) was conceptually and technically visionary. Conceptually, it linked approximately eighty schools around the world, including twelve in the circumpolar north, through subsidized access to Apple's proprietary telecommunications system, AppleLink. There was no set agenda or curriculum, just the potential for students and educators to interact on issues of common interest or concern regardless of location. Technically, AppleLink buried the arcane world of command line computer-based telecommunications under a graphical point-and-click Macintosh interface: if you could use a Macintosh, as could increasing numbers of Baffin students and teachers, you could send e-mail, browse discussion groups, and exchange digital files without worrying about such things as command-line prompts, modem strings, and telecommunication protocols.

The AGE in the Baffin proved interesting for both its successes and challenges. On the one hand, it permitted thoughtful student exchanges and discussions that could not have taken place otherwise. For example, a group of students in Grise Fiord, Canada's northernmost civilian community, compared the creation of their community on Ellesmere Island by relocation of families from arctic Quebec and north Baffin with the kinds of immigration that shaped Martha's Vineyard. Students in Pond Inlet, one of the north Baffin communities from which families had "emigrated" to Grise Fiord, developed digital resources on Inuit culture to support an Inuit studies unit at a collaborating school in the United States. And students and a teacher in Hall Beach, another north Baffin

community, established a lengthy online friendship with an employee of Apple Computer in Cupertino in which they shared their perceptions of life in Hall Beach as they struggled to comprehend what it would be like to attend a gala dinner and, later on, what it meant to be laid off from job in the high-technology sector. All of these examples illustrate Inuit students in remote northern communities celebrating and sharing their own culture with collaborators from very different cultural and linguistic contexts. Few, if any, of them would have taken place without access to the AppleLink network, the online nexus that connected schools with an interest in these types of collaboration.

On the other hand, although the network supplied the enabling medium for these types of collaborations, it did nothing specific to promote the pedagogies or institutional structures necessary for the medium to be used effectively or broadly. Some teachers just did not see the possibilities, at least not immediately: one very good program support teacher, a sort of in-school consultant and instructional leader, said to me during a discussion of the AGE's potential to connect students from widely separate locations, "Yes, but what would they communicate about?" It simply was not obvious to her that teachers and students might find this type of interaction valuable. Sometimes, she was right: the very creative teacher/principal of a very small and progressive Baffin school reported after introducing the AGE that the students just weren't interested. In other cases, as occurred with one of the first Baffin schools invited to join the AGE, despite the best of intentions the AGE was simply another good idea lost in the complexities of day-to-day operations. In summary, Baffin involvement with the AGE demonstrated the potential of a user-friendly educational computer mediated communication environment for K-12 students from remote minority culture communities, but also that acceptance

and use of that environment could not be taken for granted. Moreover, although Baffin schools did not have to pay for access to the AGE, access was expensive and was underwritten by the Apple Canada Education Foundation, a state of affairs that could not continue indefinitely.

Takujaksat: Things you might like to see

The desire to extend AGE benefits to a wider range of students, to create an environment more responsive to local needs, and to contain escalating communication costs incurred by phones and fax led to the approval and implementation of a regional electronic BBS in 1991. Dubbed *Takujaksat* ("things you might like to see" in Inuktitut) to reflect its graphical interface and based on the Canadian FirstClass® BBS modeled on the AppleLink interface, the system could be set up, customized, and administered by the technically non-proficient. Five toll-free lines negotiated with NorthwesTel, a first for the eastern arctic, provided relatively equitable access to educational users from all Baffin communities. With login and navigation screens developed to reflect Inuit culture and privilege groups set up for administrative staff, teachers, students, and guests, *Takujaksat* became the electronic nexus for education within the Baffin. Administrative memos were distributed to schools, professional forums provided a medium for curriculum development and collaboration, student forums provided a means for informal discussion as well as more focused project work. To increase accessibility and contain costs even further, a small number of schools set up local servers that integrated community services such as the Nursing Station, RCMP, and local Northern Store into the electronic mix. These servers were gatewayed to the central server in Iqaluit and from there to online

projects with national or international scope such as I*EARN and the Kids From Kanata. The *Takujaksat* model was sufficiently successful that it inspired implementation of an NWT-wide FirstClass® system, *North of 60*, to which it was gatewayed. When *North of 60* was in turn gatewayed to the Internet in 1995, all Baffin schools acquired the capacity for Internet email, three years or more before the federal SchoolNet's goal of linking all Canadian schools to the Internet was realized on March 31, 1999.

As with the AGE, however, *Takujaksat* was a mixed success, or, perhaps more accurately, a victim of its own success. Demand for access from the remote communities threatened to force the cost of the toll-free lines beyond what was acceptable. Although the community server model simultaneously increased access and reduced demand on and cost of the toll-free lines, it hugely complicated administering the system, increasing demands on both local and central personnel, most of whom had undertaken these responsibilities in addition to their regular duties.

Casual perusal of the *Takujaksat* gateway logs to the Internet suggest that there may have been a deeper problem.[3] Although demand on the system was high and there are some good examples of student use of the network for learning—the example of an extended discussion of the "High Arctic Exiles", an alternative view of the Inuit "immigration" that settled Grise Fiord and Resolute Bay and that formed the focus of the

[3] For the purposes of this paper I've chosen to leave the analysis of *Takujaksat* logs at the "casual" level; however, it's worth noting that the claim I make is based on two main sources of data. The first is a reasonably thorough review of newsgroup readership that I conducted shortly after *North of* 60 and *Takujaksat* were first gatewayed to the Internet. Although the short length of time that the gateway had been open may have made any other outcome unlikely, I did find very limited use of this resource. The second is the semi-regular, informal review of gateway traffic that I conducted as the primary system operator for *Takujaksat.* Without violating individuals' privacy, a quick review of gateway logs was sufficient to determine whether the bulk of traffic seemed destined for personal or educational destinations.

AGE interaction outlined earlier, comes readily to mind—these logs suggested that much if not most of the traffic gatewayed to the Internet may have originated from teachers for personal use. Understandable perhaps from the perspective of the majority of teachers from southern Canada living in isolated communities a long way from friends and family, this was not the main reason for implementing *Takujaksat.* As with the AGE, nothing intrinsic to *Takujaksat* connected it to classroom pedagogy. Perhaps that is why its ease of use, accessibility, and growing reach seemed to become more of a tool for teachers' personal use than it did for their pedagogical, at least with respect to Internet access.

CSILE and the possibility to structure pegagogy via a designed environment

About eight months before I learned of the FirstClass® software on which *Takujaksat* was eventually based, I read about a "computer supported intentional learning environment" (CSILE) developed at the Centre for Applied Cognitive Science at the Ontario Institute for Studies in Education (now a part of the University of Toronto, OISE/UT) (Garrison, 1990). Based on a cognitive model for the psychology of written composition derived primarily from the comparison of the composing processes of more and less skilled writers, CSILE provided a software environment to help less expert writers acquire the autonomous command of the writing processes of the more expert. Many of CSILE's features seemed to have equal potential within the types of Baffin classrooms I described above. First, because it began with an empty database, CSILE required teachers and students to supply both the topics of study and the material about those topics, thereby increasing the likelihood of an appropriate correlation with student culture, interests and literacy skills. To support improvement of those skill levels, CSILE

provided a set of cognitive scaffolds that novice writers could use to help structure contributions to various modes of discourse such as scientific reasoning, debate, and expressing opinions. As well as being readable by everyone with database access, contributions could be commented on and, with permission of the original contributor, edited. A palette of basic graphics tools allowed students to supplement their writing with illustrations, something that previous experience (McAuley, 1991) had led me to believe would encourage participation by students less inclined to contribute in writing. Finally, because it worked over a local-area network, it seemed a possible intermediate step towards students developing conversancy with effective strategies for meaningful collaboration over wide-area networks as well.

The net result was a highly literate, developmentally and culturally appropriate learning environment that built upon student input and engagement. Like *Titirausivut* and *Takujaksat* it used computer technology to provide a medium that built on what users brought to it. In addition, however, it provided a pedagogical framework and an embedded orientation to process that to at least to some extent might help to structure its use. Given contemporary efforts to develop Inuit-based programming for K-9 Baffin classrooms, the challenge this presented for classrooms run by some *Qallunaat* teachers, and then-current work on the use of "formative experiments" (Newman, 1990) to explore educational innovation in complex situations, these features of CSILE seemed very relevant. In the spring of 1992 a member of the CSILE research team at the Centre for Applied Cognitive Science at OISE enquired as to whether I was interested in participating in a research project that would investigate the potential of CSILE in Baffin classrooms. I was, but to understand why the project got the support it needed from the

Baffin Divisional Board of Education, the Northwest Territories Department of Education, and the local high school, it's necessary to look more deeply at the educational climate of the time.

Chapter 3

"What they half create, And what perceive"[1]

Inherent in the idea of intermediate spaces or spots of time is a sense of isolation or apartness that is not inconsistent with being a *Qallunaat* educator in a primarily Inuit milieu. "Spots" or "spaces" are, after all, finite and distinct from their surroundings in ways that may obscure underlying connections. As the new English language arts teacher at GREC, for example, I had only the most tenuous connection with my predecessor, a connection built on skeletal course outlines and casual references by a few teachers who had known him. Otherwise, nothing. It felt like everything I was doing was being done for the first time, a feeling that gained strength through initiatives such as Related Arts, The Baffin Writers' Project, and Takujaksat, projects that in some ways did break new ground. It also extended to other aspects of my work. In the fall of 1987, on my first trip as a new consultant fresh from five years in Iqaluit classrooms, flying north to Pond Inlet in a cylinder of cigarette smoke encased in a Hawker-Siddley 748, I read what seemed to me a thoughtful and exciting Departmental document about teaching writing. I had never seen the document as a classroom teacher when it would have been really useful to me, nor did I ever see it in use or have anyone refer me to it. It was as if I had found it washed up on a beach, completely independent of the context that produced it.

But connections do exist, however dimly perceived. Even a short glance through N.J. Macpherson's (1991) strongly anecdotal history of education in the Northwest Territories, *Dreams & Visions*, illustrates how progress seemed to be made on issues such as indigenous language education at various times, only to revert to a state of affairs similar to the more

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[1] William Wordsworth, "Lines composed a few miles above Tintern Abbey," l. 106-107.

more troubling aspects of the school system that I encountered when I first went north, and to resurface once again later. Perhaps because the reminiscences of long-time educators tend to dwell for the most part on the humorous, a conversation overheard during the winter of 1987 stands apart in my mind for the sobering first-hand insight it provided into the decades-long struggle for an appropriate place for indigenous language and culture in the formal school system. That the conversation happened at all and that I was in a position to hear it was the result of a school crisis in the early winter of 1986-87 that had necessitated time set aside for discussions between the Iqaluit Education Council (IEC) and GREC staff. I described this one disturbing aspect of an otherwise positive set of meetings in a short article later published in the newspaper of the Northwest Territories Teachers' Association:

> The discussions that ensued reaffirmed the common aims and concerns of the teachers and the elected educational officials and it would not be exaggerating to say that most people left with the feeling that something worthwhile had been accomplished; finally the education council and the teaching staff were addressing issues together.
>
> Much of the discussion had language at its focus. Teachers were primarily concerned with two issues and their implications; the difficulty of teaching high school subjects as part of an English language curriculum to students whose first language is Inuktitut, and the present lack of an adequate high school and junior high school Inuktitut curriculum. The IEC's concern was identical, with the added dimension that the majority of children at a disadvantage under these conditions were their own. A feeling was generated that finally, now that common concerns had been identified, work could be done to rectify them.
>
> However, in the midst of the optimism one sobering note could be overheard in the conversation of two long-time northern residents who commented that the entire discussion had been almost identical to one held in Rankin Inlet [an eastern arctic community an hour and a half to the west by air] ten years ago. The questions remain: have ten years gone by only to see the same set of problems pushed east by English Language Imperialism advancing from the west? Where will this discussion take place ten years from now? The middle of Lancaster Sound? Where does Inuktitut have left to go? A museum? (McAuley, 1988)

Aside from its hyperbole, the passage's conclusion could be contested from a number of perspectives. As an example at the personal level, an Inuit staff member once spoke up at a staff meeting to protest the perceived threat to Inuktitut, noting that wherever he went in Iqaluit he

heard it being spoken. National statistics seem to justify his impression: Inuktitut is the second most widely spoken Aboriginal language in Canada and from the perspectives of rate of growth and percentage of speakers who use it regularly at home it is the strongest of the top three (Statistics Canada, 1998, 2003). On the other hand, one often hears comments from long-term northerners, Inuit and *Qallunaat* alike, to the effect that young people seem to be less fluent in Inuktitut than formerly, less able to talk to the elders. More rigorous studies also point to a weakening of Inuktitut (Dorais, 1989). More important, though, this passage reflects a growing realization of the connection between my experiences in Baffin schools and larger historical processes. It points out that the role of Inuktitut in Baffin education emphasized to such effect in my initial teacher orientation in 1982 was not new, nor unproblematic. In effect, by noting the persistence of the challenges to the representation of indigenous language and culture in the formal school system it establishes a sense of continuity to what initially seemed to me isolated spots of time.

That sense of continuity persists still, finding an ironic and sobering echo in a discussion that took place twenty years after I first went north, fifteen years after the conversation reported above, and twenty-five years after the original subject of that conversation. Three of us who had gone north in that same fall of 1982 got together almost exactly twenty years later to celebrate what had been a significant turning point in our lives. Each of us had spent over sixteen years in the eastern arctic in education and I think it's fair to say that individually and collectively we had made something of a significant contribution (O'Donoghue, 1998; Tompkins, 1998). Aside from the nostalgic sense that "things ain't what they used to be" that might be expected in reminiscences of times past intensely lived by people no longer positioned to participate directly, there was also a sense of frustration or disappointment that many of the things we had worked

for seemed to be eroding rather than evolving. It was almost as if we had become the "long-term northern residents" referred to in my newspaper tirade, transported fifteen years into the future to repeat the discussion held in Rankin Inlet twenty-five years prior. So, while there is a sense of continuity between the spots of time of our personal experiences and a broader historical context, it is not entirely a happy one.

Something to which all three of us contributed and which shaped us as educators was *Piniaqtavut*, a K-9 program of studies intended to articulate and implement a coherent Inuit worldview in Baffin classrooms. It brings together within a specific educational project both personal histories and historical processes, but also provides links to a the beginnings of a comprehensive theoretical framework that can help bring some coherence and meaning to these experiences. As an educational initiative and as a link to theory, *Piniaqtavut* also provides both an impetus for the implementation of CSILE/Knowledge Forum in the Baffin and a framework from which to explore its impact.

Piniaqtavut: "The Things We Might Like to Do"

As outlined in Chapter One, the creation of the Baffin Divisional Board of Education (BDBE) was in some respects "Nunavut writ small" in that it set up a democratic framework for local and collective autonomy in matters of education to the communities of the Baffin region. In May of 1987, barely two years after the creation of the BDBE, educators from across the region got together to begin to work on an "integrated curriculum project" that would begin to actualize the BDBE's vision of what education should be (Baffin Divisional Board of Education, 1987b). Stemming from the desire to consolidate the bewildering number of curriculum guidelines required for K-9 classrooms, the project sought to integrate the concepts and topics from these

curricula into a set of thematic units that would then form the basis of instruction. Themes were selected to satisfy requirements of official curriculum guides, but also in response to input from educational staff, students, and a region-wide public survey.

In the two years of its development, the integrated curriculum project evolved from the consolidation of curriculum objectives into a manageable number of themes into something with a deeper significance with respect to what formal education might be in the Baffin. Eleven of the fifteen representatives at the first integrated curriculum meeting in May, 1987 and thirteen of the twenty-three at the second meeting the following September were *Qallunaat*. However, by the time the committee's work approached completion in late 1988 and early 1989, thirteen of its eighteen members were Inuit and the integrated curriculum project had acquired its Inuktitut name, *Piniaqtavut*, which very loosely translates as "the things we might like to do." Although it would be misleading to equate influence and the power to get things done with simple numbers, the shift in the demographics of the committee reflects a shift from an educational project that could essentially serve any jurisdiction—documentation for the project's first meeting in May, 1987 notes that "Alberta Education is presently developing this concept for use in their schools" (Baffin Divisional Board of Education, 1987a)—to one specifically intended to serve the majority of students in the Baffin region through incorporation of an Inuit worldview. To reflect this worldview, themes at each grade level were organized according to categories of land, sea, sky, and community around a core of Inuit Beliefs. This structure built upon and derived unity from a developmental learning framework and philosophical base generated by the committee. The *Piniaqtavut* document was approved by the Baffin Divisional Board of Education in the spring of 1989 and an inservice to support implementation was presented in schools the subsequent fall.

Piniaqtavut was problematic in a number of ways. The Inuit beliefs around which the themes revolved had to wait for more explicit definition in the *Inuuqatigiit* curriculum that did not appear until 1996, for example. In addition, some educators questioned the extent to which the document actually reflected an Inuit worldview. Further, the promised number of supporting units was never produced, a serious deficiency given the large number of inexperienced southern teachers who were expected to use *Piniaqtavut* to frame their instruction. Despite these failings, *Piniaqtavut* did define K-9 education in the Baffin region for at least a decade. The simplicity of the document, the fact that Inuktitut was represented equally with English, and the fact that it was developed entirely in the Baffin no doubt contributed to the enthusiasm with which it was received at the fall inservices in 1989, for the most part by Inuit and *Qallunaat* educators alike.

As a *Qallunaat* member of the Piniaqtavut Committee, however, I particularly remember one of our last meetings. By that time Inuit made up the entire steering committee and business was conducted in Inuktitut: at this stage of the process *Qallunaat* educators were consulted and the language of discussion shifted to English only when specific expertise or advice was needed. Sometimes the confluence of Inuit and non-Inuit perspectives led to some interesting exchanges. I remember one of the Inuit co-chairs of the committee describing how the developmental learning framework came to be. She mentioned that at one point in the discussion she took what had been developed and inverted it, saying something like, "There! That's the way Inuit see it" (J. Hainnu, personal communication, January, 1989). A *Qallunaat* educator later commented, "But that's just Piaget upside down" (M. Bartlett, personal communication, January, 1989). Maybe so, but even if so, and notwithstanding that the Inuit members of the committee may have learned of Piaget in their courses at the Eastern Arctic Teacher Education Program (EATEP), they were reinventing him for their own purposes. For them, to understand was to invent just as

it had been for me with respect to Related Arts and the process of invention also brought ownership.

On another level, *Piniaqtavut* represented a systemic validation of the types of experiences that for me found their clearest expression in the Related Arts program. Just as I had needed to look for a different way to structure the classroom to secure the more powerful and productive engagement of students, so was the educational system, itself restructured through the creation of the Baffin Divisional Board, looking for alternatives around which to reinvent itself. In a sense it was as if the *Piniaqtavut* process of program development turned the standard top-down processes of curriculum upside down by validating and building on the strengths and experiences of classroom teachers. It was a heady experience for all involved.

Part of the headiness may have originated in the feeling that to a certain extent we were bucking the system, doing something brand new and exciting. At a the International Council of Teachers of English conference in Ottawa in 1986 I attended a session on "collective creations," a form of drama in which a presentation emerges from the interests, stories, and skills of the participants. In the discussion following the presentation a member of the audience asked whether the presenters felt the technique could be used with Aboriginal students. The presenters didn't know, but I did—unbeknownst to ourselves, we had reinvented collective creations in developing Related Arts for the realities of a cross-cultural classroom in Iqaluit much as the *Piniaqtavut* Committee later reinvented Piaget to help bring coherence to a rejuvenated education system, newly owned by Inuit.

On the other hand, while the school's administration had provided virtually unconditional support for the creation of Related Arts, and the BDBE had done the same for *Piniaqtavut,* the Department of Education in Yellowknife shied away from full support of *Piniaqtavut* for reasons

of policy: curriculum development was a Departmental responsibility, not that of the divisional boards of education. This jurisdictional challenge is at least part of the reason that "Integrated Curriculum Project" evolved into the "*Piniaqtavut* Integrated Program," a program in the NWT parlance being a collection of recommended learning experiences, resources, and reading material intended to address the knowledge, skill, and attitude objectives outlined in Departmental curricula in a fashion congruent to the strengths and needs of the students in Baffin classrooms. To further allay Departmental skepticism a research component was integrated into the *Piniaqtavut* development process to ensure that the decisions of the committee were grounded in current knowledge about bilingual education. While problematic from the perspective that the need for external justification at least to some extent undermined the bottom-up spirit of *Piniaqtavut's* development, the selection of Jim Cummins' (1986; 1989) "interactive/experiential model" as the basic guide to the approach to teaching advocated by *Piniaqtavut* turned out to be another example of external validation of northern inventiveness. In this case, the approaches advocated by the interactive/experiential model, well grounded in empirical data from other contexts, also reflected many practices of successful Baffin teachers. It had at its heart:

- genuine dialogue between student and teacher in both oral and written modalities.
- guidance and facilitation rather than control of student learning by the teacher.
- encouragement of student-student talk in a collaborative learning context.
- encouragement of meaningful language use by students rather than correctness of surface form.
- conscious integration of language use and development with all curricular content rather than teaching language and other content as isolated subjects.
- a focus on developing higher level cognitive skills rather than on factual recall.
- task presentation that generates intrinsic rather than extrinsic motivation.

Piniaqtavut, p ii, citing Cummins (1989), p. 64.

As we're already acquainted with the general outline of the Related Arts course as something that was for most of the teachers and students a powerful educational experience, I've outlined the parallels between it and Cummins' Interactive/Experiential Approach in Table 3.1 to bring out the relationship between the two.

Table 3.1 Elements of the interactive/experiential approach demonstrated in the Related Arts program.

Interactive/ Experiential Approach	Related Arts
Genuine oral and written student-teacher dialogue	Genuine dialogue lay at the core of determining student interests and how those interests could be developed, explored and expressed through drama, music and art.
Teacher facilitation versus control	Early decisions by teachers about what and when was to be developed and presented evolved into a process of negotiation with students as indicated in the student comment noted earlier, "We did it all ourselves!"
Collaborative student-student talk	Collaborative student-student talk was encouraged through a course organized around small group work to accomplish tasks necessary for completion of a greater whole much as jigsaw groups are structured in cooperative learning.
Meaningful language use versus surface correctness	Language was used for the executive processes of getting things done and the communicative processes of presenting them: surface correctness was subservient to these.
Conscious integration of language	Not entirely applicable as this was a single course rather than an entire program. However, it should be noted that instruction on specific language usage in Inuktitut and English occurred within the context of the applications of language noted above. We also made a deliberate effort to ensure that both Inuktitut and English had a place in productions.
Focus on higher level cognitive skills	Lower level cognitive skills such as factual recall served higher level skills such as analysis and synthesis to create integrated productions.
Task presentation for intrinsic motivation	Task presentation around student ownership and choice in an active environment contributed to intrinsic motivation.

For me, and I suspect for many of the other teachers who received *Piniaqtavut* so wholeheartedly, the power of the interactive/experiential approaches lay less in their grounding in empirical data than their resonance with powerful and highly motivating teaching experiences. In this sense, it was more like our experiences as teachers validated the interactive/experiential approaches than the other way around and thereby gave them both legitimacy as elements of a framework to guide us further.

As Ladson-Billings (1995) does of her theoretical framework for culturally relevant pedagogy, it's tempting to say of Cummins' interactive/experiential model, "But that's just good teaching!" However, in extending the same matrix to the three Baffin applications of computer networking described earlier, the Baffin Writers' Project, the Apple Global Education Network, and *Takujaksat*, Table 3.2 brings out a pattern that may help illustrate just how difficult it is to establish or maintain "good teaching" in the face of innovation and change:

Table 3.2 The relationship between Baffin educational applications of technology and the interactive/experiential approach.

	Baffin Writers' Project	Apple Global Education Network	Takujaksat
Genuine oral and written student-teacher dialogue	Genuine dialogue grew out of the processes required to assemble submissions into a formal publication.	Genuine dialogue depended on the specific task to which the network was put. Because this was a voluntary, open-ended activity, chances were greater for student-teacher negotiation to establish a project.	Because Takujaksat was accessible almost universally by teachers and independently by students in a number of schools, genuine student-teacher dialogue was a matter of chance.
Teacher facilitation versus control	Difficult for any one teacher to have control because of shared production of the student magazine.	Depended on specific task to which the network was put, but perhaps because this was an open-ended foray into new territory, it tended to attract progressive and creative teachers, less prone to control and more prone to consult.	Possibly because almost all teachers who wished to do so could access Takujaksat freely to connect with other Baffin teachers and, later, to the Internet, collaborative student-teacher engagement around online projects on Takujaksat was proportionately less than with its predecessors.

Collaborative student-student talk	In some schools students collaborated over their writing; in some they collaborated over material selection and magazine production.	As above. Successful uses of the network tended to involve students working together in collaborative groups.	Greater student access made possible both local student-student collaboration and distributed "talk" via the online chat feature. However, relatively fewer collaborative projects meant a relatively lower proportion of purposeful talk.
Meaningful language use versus surface correctness	Language used to communicate to a larger audience. Surface correctness subsumed by that function.	Students and teachers alike used language to share with online peers. Surface correctness only important to the extent that it impaired or facilitated understanding.	As with the AGE.
Conscious integration of language	Consciousness of language integral to writing, editing, and publishing processes.	Dependent on teacher and specific use of network. Shared access to a very limited resource tended to require some focus on how language should be used to share with others.	No necessary connection with consciousness of language. Wider access to the resource for a greater range of purposes meant proportionately less teacher facilitation and control of student language use.
Focus on higher level cognitive skills	Writing and publishing are essentially high-level cognitive tasks.	Dependent on teacher and specific use of network, though collaborative projects by their very nature require higher level cognitive skills to succeed.	Virtually no emphasis on decontextualized factual recall or other low-level cognitive tasks, but also a relatively low proportion of integration into student learning.
Task presentation for intrinsic motivation	Clearly focused on a highly motivating task. Voluntary student participation ensures intrinsic motivation.	Dependent on teacher and specific use of the network. Because it was an optional activity and attracted creative and enthusiastic teachers, student participation was generally engaged so as to secure their intrinsic motivation.	As with the AGE with the addition that students in some locations could choose to access the BBS independently of formal learning tasks.

The Baffin Writers' Project, the Apple Global Education Network and *Takujaksat*, were all similar to the Related Arts course in that they had the potential to support interactive/experiential

approaches to learning. They differed in the specific computer technologies used to facilitate interaction, the range of purposes to which each technology could be put, and, I would say, in their relative emphases on the seven characteristics of the interactive/experiential approach. The Baffin Writers' Project, for example, set up a framework in which a new technology, desktop publishing, was used by a self-selected group for a very specific purpose, that is, encouraging student literacy in Inuktitut and English through production of a regional literary magazine. A narrow scope and clear objectives, although constraining, contributed to the project's successes. By way of contrast, while it could be and was used to support the goals of the Baffin Writers' Project, the AGE was much broader in scope. To narrow the scope, Baffin educators who wished to participate submitted brief proposals outlining how they intended to use the AGE to support learning in their classroom situation before gaining access. At the very least this required that they make time in busy schedules to familiarize themselves with what was then an unheard-of technology and determine how it might enhance student learning. Perhaps because of self-selection and the time invested in advance, the users of the AGE, although relatively small in number, for the most part did follow through in terms of engaging students.

Intended to extend the types of successes of the previous two projects to a much broader base of teachers and students, *Takujaksat* was also envisioned as a medium to support and enhance administrative and teacher professional communication across a huge geographical region with very limited forms of access: it was not unheard of in the 1980s for mail from Iqaluit to take months to reach more remote settlements. In fact, depending on who you talked to as efforts were made to contain the escalating costs that were the result of its success, you might be told that *Takujaksat* had not really been intended for student use at all, although the original project proposal, the student-centred forums that were part of the system, and the professional

development workshops to support development of collaborative intercommunity projects all belie this point of view. Nevertheless, as compared to its predecessors, the range of obvious personal and administrative uses to which *Takujaksat* could be put and the much larger number of people who had access, taken in conjunction with the proportionately smaller systemic incentives and supports to ensure its use for interactive/experiential pedagogy meant there was little intrinsic reason to look for ways in which it might be used to substantially contribute to what was happening in the classroom.

The relatively low proportion of interactive/experiential educational applications of *Takujaksat* in the face of much wider access and a broader range of possible applications raises three main questions. The first is the extent to which *Takujaksat* might have realistically been expected to contribute to interactive/experiential education within a system as numerically small as the Baffin. It could be that those who saw the potential for technology in education and made it a priority made up a relatively small proportion of the total number of educators. Given that earlier initiatives would have identified and involved many of this group, a sudden additional broad-based surge of interest in *Takujaksat* would have been unlikely.

A second more serious question is the extent to which interactive/experiential approaches were actually a part of most classrooms. Although I hate to admit it given the headiness of the educational hopes embodied in *Piniaqtavut* and the enthusiasm with which it was received, reflection leads me to believe that this was lower than I'd like to think. As a consultant I visited a large number of classrooms and the types of innovations that I described earlier as ways of supporting small high school programs, however wonderful, were the exception rather than the rule. Given that Nunavut educators were relatively young and inexperienced—the average age was 34, nearly 37 per cent had worked four years or less in education, and 40 per cent had less

than four years experience in the NWT/Nunavut (Nunavut Boards of Education, 1995)—this is not surprising.[2] Moreover, while there was considerable desire to learn more about using computers in education and studies such as those based on the Apple Classrooms of Tomorrow support the idea that computer technology can act as a catalyst for changes that enhance student-centred education (Sandholtz, Ringstaff, & Dwyer, 1997), those changes evolved over a number of years, something that was less likely to happen in the Baffin given the relatively high teacher turnover rate and, indeed, the political flux anticipating the creation of Nunavut. In short, given the timeframe and competing demands on a relatively young teaching population, the majority of which was working in a foreign culture, it was probably unrealistic to expect to see any large-scale integration of *Takujaksat* and interactive/experiential education. In a sense, the *Qallunaat* teachers in the throes of this type of change—the majority of the teaching staff of the Baffin and more particularly of the junior/senior secondary staff with whom I worked—could be considered the parallel to Inuit culture in the throes of the larger socio-political-cultural changes that were leading to Nunavut.

The third question is whether the second is indicative of something deeper still. The low proportion of pedagogical uses of *Takujaksat*, particularly those with an intrinsic interactive/experiential component, may be seen as the result of an unfamiliarity with the technology and pedagogy on the part of a relatively inexperienced teaching staff many of whom were already struggling to come to terms with a new culture. This might have been anticipated given the recent nature of the previous work with computer networks and interactive/experiential education in the Baffin that had informed the development of *Takujaksat*. Quite simply, there

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[2] These figures are taken from a Nunavut-wide survey of educators conducted in November 1994. Although they aggregate results from the other two Nunavut boards of education as well as the Baffin, they may be considered sufficiently representative of the Baffin for the purposes to which they are put here.

hadn't been sufficient opportunity for successful practices to be documented, disseminated, and adapted to the wider reach of the new environment. But this phenomenon may also be interpreted as an indication of the fact that most teachers carry with them when they first step into the classroom upwards of sixteen years of educational experiences, little of which, if researchers like Goodlad (1984) can be believed, have had anything to do with interactive/experiential education at all, let alone with the interactive/experiential applications of computer networks such as *Takujaksat*.

Feldman et al. (Feldman, Konald, & Coulter, 2000) explore a similarly disappointing experience in the use of the Internet to support science investigations. Although they make recommendations on how results might be improved, they don't move beyond the surface challenges to make a connection to any theoretical construct that might support a deeper understanding of the reasons for those challenges. An analogous criticism might be made of *Piniaqtavut*'s emphasis on interactive/experiential approaches in that they represent the surface behaviours of effective Baffin teaching practices, but say nothing about the extent of or the reasons for the barriers to those behaviours. The surface behaviours represented in the interactive/experiential approaches advocated by *Piniaqtavut* do rest on a theoretical framework, however, and it's to that framework that we'll look next.

The Intervention for Collaborative Empowerment

In the spring of 1985 another teacher and I took a group of high school students from Iqaluit on an exchange trip to southern Alberta. On the southbound leg of our journey we had an overnight layover in Montréal between the flight from Iqaluit and the one that would take us to Calgary. We settled the students into their airport hotel rooms and checked on them before

going to bed ourselves. I don't remember how we found out later—perhaps we noticed that some of them seemed overly tired after what was supposed to have been a good night's sleep—but it turned out that one of the students had taken a number of his peers on a late night tour of downtown Montréal. "I ain't no dumb Inuk!" he said, obviously as proud of his ability to navigate from the airport hotel to the downtown many miles away and return safely as he might have been of his ability to perform similarly on the tundra back home. A couple of years later I saw the same student struggle to explain on national television in a CBC special about the Gordon Robertson Education Centre in Iqaluit what it meant to him to be Inuit. The best he could do were some vague comments about hunting and building an igloo. I last saw him at the airport in Cape Dorset several years later wrestling air freight onto a *qamutiq* (sled) in the middle of a blizzard while the mostly *Qallunaat* passengers watched—some with unconcealed amusement—from the warmth of the airport waiting room.

Like the students who faded to the back of my classroom and disappeared during my first couple of years teaching in Iqaluit, this student's comment, "I ain't no dumb Inuk!" embodies the tension between what is valued in traditional Inuit culture and the *Qallunaat* values that, to some people at least, seem to increasingly define success in the modern north. Recent events in the Nunavut Legislative Assembly evince the same tension on a more public stage. Forced to resign over an internal disagreement, cabinet member Jack Anawak commented about the process, "When the Premier wants to get something, he doesn't act like an Inuk," and the issue of what it means to "act like an Inuk" was subject of further discussion in the legislature, the majority of which is Inuit (D'Souza, 2003). A distinguishing feature of the tension between Inuit and *Qallunaat* values in the Baffin is that it remains a tension, it is not yet so unbalanced as to become what Freire calls a "cultural invasion" in which "the invaders penetrate the cultural

context of another group, in disrespect of the latter's potentialities... [to] impose their own view of the world upon those they invade and inhibit the creativity of the invaded by curbing their expression" (1970, p. 150). Again on the recent political stage, the proposed integration of Inuit values and beliefs into Nunavut wildlife law (IQ in action, 2003) illustrates the potential for a positive synthesis of Inuit traditional knowledge and *Qallunaat*-style legislation. *Piniaqtavut*'s attempted synthesis of an Inuit worldview, *Qallunaat* research on bilingual education, and topics of instruction derived from both cultures seeks a resolution of the same tension within the school system. According to the intervention for collaborative empowerment, resolving this tension is key to the academic success of minority language students.

The academic success of second-language students such as those in the Baffin depends on their moving from the cognitively undemanding, contextually rich discourse of day-to-day conversation to the cognitively demanding, context-reduced discourse characteristic of academic thought (Cummins, 2001, p. 67). Classrooms that facilitate this growth are based on cognitively demanding, contextually rich instruction:

> If the instruction is cognitively undemanding..., students will learn very little and quickly become bored in the process; if the instruction goes beyond what students can process cognitively (because of lack of contextual support), then they will also learn very little and become frustrated and mentally withdraw from academic effort. (Cummins, 2001, p. 131)

Through the development of appropriate contextual supports good second-language teachers scaffold cognitively demanding tasks that secure the cognitive engagement of their students. In classrooms where teachers and students share similar cultural and socio-economic backgrounds, that may be all that needs to be said. However, in classrooms like the majority of those in the Baffin, the gap between *Qallunaat* teachers' cultural and socio-economic backgrounds and those

of their primarily Inuit students may undermine the identity investment that is also necessary for student academic success:

> There is a reciprocal relationship between cognitive engagement and identity investment. The more students learn, the more their academic self-concept grows, and the more academically engaged they become. However, students will be reluctant to invest their identities in the learning process if they feel their teachers do not like them, respect them, and appreciate their experiences and talents. (Cummins, 2001, p. 126)

Unacknowledged and unaddressed, then, the Inuit-*Qallunaat* tension described previously can effectively limit the chances for Inuit student success. The goal of the intervention for collaborative empowerment is to provide a framework to reverse this process.

The intervention for collaborative empowerment situates the disproportionate lack of success of minority students in the unacknowledged power structures manifested in the Inuit/*Qallunaat* tension described above. Distinguishing between the micro-interactions of the classroom and the macro-interactions of the wider society, the intervention locates educational structures, such as official policies and curriculum documents, and educator role definitions, or the orientations of educators to their work, as mediating factors between these two poles (Figure 3.1).

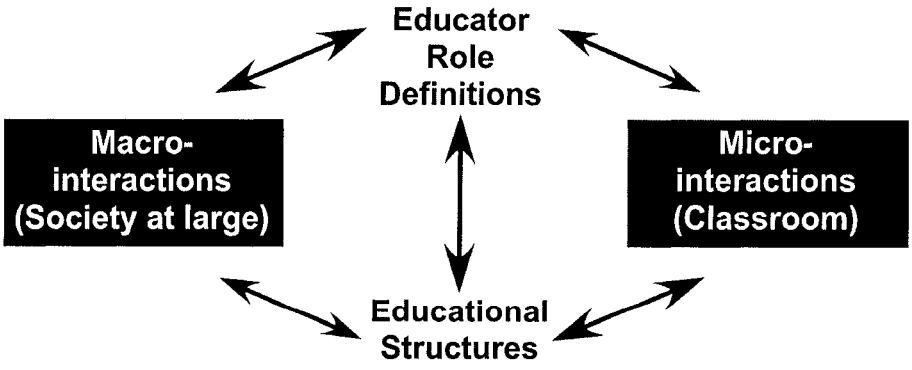

Figure 3.1. Educator role definitions and educational structures mediate between macro-interactions of society at large and micro-interactions of the classroom. *Note.* Adapted from *Negotiating Identities* (p. 202) by Jim Cummins, 2001, Los Angeles: California Association for Bilingual Education.

One doesn't have to look very far to see how the macro-interactions of society at large tend to favour some groups over others: if one is born Aboriginal in Canada, for example, one is much more likely to live without running water, suffer from diabetes or tuberculosis, live in poverty, end up in prison, or experience failure in school than if one is not (Indian and Northern Affairs Canada, 1996). Even without the centuries of oppression experienced by Aboriginal peoples to the south and with at least some of the defining characteristics of an "autonomous minority" (Ogbu, 1978, 1998) by virtue of having settled their land claim and making up the majority of the population of Nunavut, the Inuit experience is in many respects similar. In Nunavut, for example, the minority non-Inuit population holds a disproportionately large share of the better-paid employment as compared to the majority Inuit population. And even within a context intended to foster Inuit self-determination, that already disproportionately large share actually increased in the five years preceding the creation of Nunavut (Nunavut Bureau of Statistics, 1999). According to Cummins' model, the disproportionate rate of failure of minority students in the school system results from the replication in the micro-interactions in the classroom of the coercive power structures[3] that underlie these types of macro-interactions.

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[3] Like many who deal with the issues of power in the classroom, Cummins talks about "relations of power." I am uncomfortable with the expression "relations of power" because, like the current catchphrase, "weapons of mass destruction," it has been used so widely and indiscriminately that it has ceased to have much meaning. As Cherryholmes says, "It is redundant to refer to a *power relation* because power *is* a relation," that is, "relations among individuals or groups based on social, political, and material *asymmetries* by which some people are indulged and rewarded and others negatively sanctioned and deprived. These asymmetries are based on differences in *possessions* or *characteristics*, and power is constituted by relationships among those differences." (Cherryholmes, 1988, p. 5) Cherryholmes also notes, "the effects of power are as important as the exercise of power itself" (p. 5), the implication being that intentionality and the exercise of power may be irrelevant in terms of the impact that power has on the classroom. We will explore this in more detail in the next chapter as we begin to examine the implementation of CSILE/Knowledge Forum in Baffin classrooms.

Cummins argues that this disproportionate rate of failure is not inevitable and proposes the collaborative exercise of power by dominant and sub-dominant groups within the classroom to counter the coercive power structures of the wider society and reverse the pattern of failure of minority students. He notes that

> Educational structures, together with educator role definitions, determine the micro-interactions between educators, students, and communities. These micro-interactions form an interpersonal space where minds and identities meet. As such, these micro-interactions constitute the most immediate determinant of student academic success or failure.
>
> Micro-interactions between educators, students and communities are never neutral; in varying degrees, they either reinforce coercive relations of power or promote collaborative relations of power. In the former case, they contribute to the disempowerment of culturally diverse students and communities; in the latter case, the micro-interactions constitute a process of empowerment that enables educators, students and communities to challenge the operation of coercive power structures. (Cummins, 2000, pp. 44-45)

Educational structures such as the community high school program or the *Piniaqtavut* program of studies supported by the Baffin Divisional Board of Education, or indeed the Baffin Divisional Board of Education itself, can help or hinder the collaborative exercise of power in the classroom, but in and of themselves they are neither necessary nor sufficient. What is necessary and may be sufficient in the absence of supportive educational structures are appropriate educator role definitions, that is, how educators define and enact the relationship between them and their students in the classroom.

The intervention for collaborative empowerment structures educational role definitions along a continuum between two broad orientations, the transformative/intercultural orientation, which contributes to the collaborative exercise of power and the academic success of minority students, and the exclusionary/assimilationist orientation, which contributes to the replication of the coercive exercise of power of the wider society and the failure of minority students.

Educators' positions between these poles are determined according to their placement along four axes, cultural/linguistic incorporation, community participation, pedagogy, and assessment. Figure 3.2 illustrates these relationships.

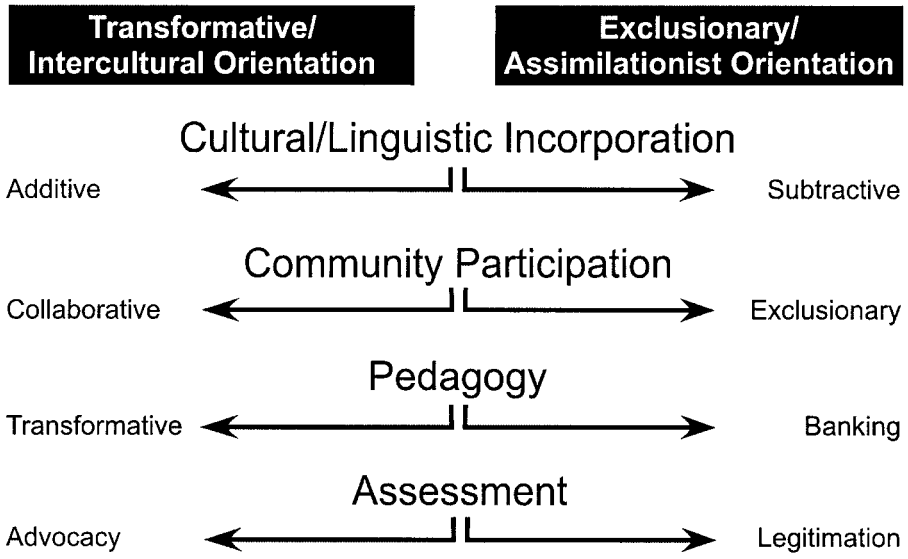

Figure 3.2 The four axes of educators' role definitions. Educators' positions along these axes indicate whether they are more inclined to a transformative/intercultural or exclusionary/assimilationist orientation in the micro-interactions of their classrooms. *Note.* Adapted from *Negotiating Identities* (p. 202) by Jim Cummins, 2001, Los Angeles: California Association for Bilingual Education.

A subtractive cultural/linguistic incorporation neglects, discourages, or excludes a role for a minority language such as Inuktitut in the classroom and promotes the use of the dominant language such as English. One of the early events from my first year of teaching most excruciating to recall is the day that, overwhelmed and excluded by the flow of Inuktitut within an unruly Grade 8 English class, I told them that from that point on English would be the sole language spoken in class: after all, it was English they were there to learn was it not?[4] Had this

[4] This is not entirely as appalling as it first seems as there is a school of language learning that advocates the complete separation of first and second language environments. This need not

edict remained in place for longer than the rest of the forty-minute class period in which it was announced, it would have exacerbated an already challenging situation, undermined a resource that the students brought to the classroom, and communicated to the students much the same message that residential schools contributed to Aboriginal students elsewhere. As it is, it stands as an all-too-personal example of the coercive exercise of power by a representative of a dominant culture through imposition of a subtractive orientation to cultural/linguistic incorporation.

On the other hand, additive orientations to cultural/linguistic incorporation seek to build on students' first language and culture to support learning a second. By way of atoning for my early gaffe, examples from my own experience include students writing and performing bilingual Inuktitut/English productions in Related Arts, dramatizing the balcony scene from *Romeo and Juliet* in Inuktitut for English Language Arts, and writing a play in Inuktitut based on James Houston's English novel, *The White Dawn*. These latter examples demonstrate encouragement of cognitive and linguistic growth in both languages, hence their additive orientation.

Educators also define their roles along a community participation axis, ranging from an exclusionary pole characteristic of an exclusionary/assimilationist orientation to a collaborative pole characteristic of a transformative/intercultural orientation. The former pole sees the values and knowledge of the community as irrelevant to students' schooling at best and as an impediment at worst. The opposite pole sees parents and community members as actively and positively involved in children's education, not simply as reinforcement for school values, but as

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necessarily lead to subtractive cultural/linguistic incorporation as the first language could be drawn in and built on to support the learning of the second. What is appalling, however, is that the arbitrary exercise of power by an inexperienced teacher emerging from a problem with classroom management probably would have led to subtractive cultural/linguistic incorporation had it remained in force. Luckily it didn't.

sources of values and knowledge that shape school life. The on-the-land program that was an integral part of GREC school life when I started working there in 1982 is an example of collaborative community participation in that it employed local hunters to organize and lead hunting trips for students and educators. Participation in that program as novices rather than experts was a transformative experience for many *Qallunaat*, providing greater appreciation for their students and the strengths and skills of their parents. The boundary between community exclusion and collaboration is not necessarily clear-cut, something illustrated in the perception of the student whose story begins this paper of the school as the place "where the white people are" before she met her Inuk teacher. Nor is community participation necessarily easy to maintain. Funding cuts and the desire to develop a formal curriculum around the GREC hunting program eventually undermined it, something that also illustrates the insidious impact of dominant paradigms and values.

While educators' role definitions along cultural/linguistic incorporation and community participation axes make significant contributions towards the academic success of minority students, the processes through which they are incorporated into or excluded from instruction are defined by the pedagogical axis. Following a fairly mainstream taxonomy similar to that proposed by Miller and Seller (1985), the intervention for collaborative empowerment discusses pedagogy in terms of a traditional orientation at the exclusionary/assimilationist pole, through a constructivist orientation, to a transformative orientation at the transformative/intercultural pole. Although these orientations could be distinguished from each other on any number of criteria, Cummins (2001) discusses them in terms of their instructional assumptions about language, knowledge and learning and their social assumptions about curriculum and student outcomes.

Like Miller and Seller's (1985) transmission orientation or Freire's (1970) banking concept of education, Cummins' (2001) traditional pedagogy places the teacher at the centre of a classroom in which the knowledge deemed valuable by the dominant group in society is dispensed to students who are assumed to know little else other than what they need to make sense of what is being distributed. In this process language is decomposed, knowledge is static, and learning involves the hierarchical internalization of concepts from simple to complex. In terms of social assumptions, traditional pedagogy sees the curriculum as a means to cultural literacy, that is, a means to the knowledge, skills, and attitudes valued by the dominant group. Students are expected to comply uncritically with the process of joining, or more cynically, being indoctrinated into the status quo. Because the knowledge, skills, and attitudes valued by the dominant group are the focus of traditional pedagogy, there is little intrinsic need to value learner diversity, or even acknowledge it except as a barrier to be overcome. Traditional pedagogy privileges those from the dominant group who are more likely to enter school predisposed to the learning they are expected to acquire.

Deriving from the progressive view of education that has its roots in the work of John Dewey (1938/1963) and similar to the transactional view of curriculum put forth by Miller and Seller (1985), Cummins' (2001) constructivist pedagogy sees teachers and students jointly engaged in the process of learning through collaborative enquiry. This process acknowledges that students' existing knowledge, skills, and attitudes must be recognized and built on for successful learning, something that may potentially encourage the success of diverse students. However, a more sound cognitive basis for learning does not necessarily translate into actions that bring together the world inside of school and outside that are necessary for community participation and linguistic inclusion, nor does it acknowledge issues of power in the wider

society that may undermine the potential for such actions. In the transactional pedagogy difference may be celebrated, but it is not explored and students may be liberal, but they are also likely to be uncritical, at least as Cummins sees Ira Shor's (1992) sense of critical literacy, which implies:

> Habits of thought, reading, writing, and speaking which go beneath surface meaning, first impressions, dominant myths, official pronouncements, traditional clichés, received wisdom, and mere opinions, to understand the deep meaning, root causes, social context, ideology, and personal consequences of any action, event, object, process, organization, experience, text, subject matter, policy, mass media, or discourse. (Cummins, 2001, p. 222, citing Shor (1992), p. 129)

Intended to support the development of this type of critical literacy, Cummins' transformational pedagogy differs from the transactional in its focus on "critical" as opposed to "collaborative" inquiry as the basis of learning, critical in this context meaning much the same as it does in Geuss' definition of a critical theory, "A reflective theory which gives agents a kind of knowledge inherently productive of enlightenment and emancipation" (Geuss, 1981). This extends the transactional pedagogy by basing the joint interactive construction of knowledge on the connection between students' experiences and the power structures that underlie social realities and the possibilities for individuals and groups to apply the knowledge constructed to effect change. The implication is that an understanding of the impact of difference and an opportunity to act on that understanding to effect change will make education more relevant to a greater diversity of students.

All three of these pedagogical orientations are gross oversimplifications in the sense that no educator adheres exclusively to one or another, nor does any pedagogy inevitably disempower or empower culturally diverse students. Inherent in successful cross-cultural pedagogy is a tension implied in Ladson-Billings' phrase "But that's just good teaching!" (1995, p. 159) or

Kleinfeld's (1972) description of the "supportive gadfly" that belies simple dichotomies. It is possible to imagine, for example, a caring, well-organized, well-informed, and creative traditional teacher who inspires academic success in a greater diversity of students than a transformative teacher without these characteristics. It is also possible to imagine a relatively traditional teacher dealing with issues about the creation and exercise of power in society just as it is possible to imagine a more transformational teacher using direct instruction to communicate to students what they need to know to get them to the next step in an investigation. The point is, though, that "educators generally adhere to a cluster of two or three orientations to curriculum that form metaorientations (major positions) in curriculum programs" (Miller & Seller, 1985, p.5) and that given the common core of "good teaching," transformational pedagogy will include more culturally diverse students than will traditional, resulting both in greater academic success and the potential to act to address the effects of the inequities of the wider society.

Assessment, the fourth axis of Cummins' intervention for collaborative empowerment, is integrally linked to pedagogy. Because it supposes a body of knowledge valued by the dominant society that must be transmitted to and retained by learners, traditional pedagogy lends itself to such things as high-stakes standardized testing at the system level that, in turn, drive complementary forms of assessment and instruction at the classroom level. The emphasis on mastering an officially sanctioned body of knowledge tends to devalue the knowledge and experiences of groups that diverge from the dominant paradigm and may mitigate against the success of students from those groups. Measured against these kinds of assessment criteria, lack of student success effectively locates "the 'problem' within the student, thereby screening from critical scrutiny the subtractive nature of the school program, the exclusionary orientation of teachers towards subordinated communities, and 'banking' models of teaching that suppress

students' experience and inhibit them from active participation in learning." (Cummins, 2001, p. 223) Both constructivist and transformational pedagogies, on the other hand, build on students' prior knowledge, experiences, and interests and therefore intrinsically support forms of assessment that recognize students' growth against those preconditions. The teacher's responsibility in this context is twofold: to develop and implement appropriate assessment within the classroom and to advocate for the rights of students who diverge from the norms and standards embedded in system-wide assessment.

Collaborative Critical Inquiry: Intercultural Education for the Internet Age

Although the intervention for collaborative empowerment would provide a valid theoretical framework from which to begin discussion of the experience with CSILE/Knowledge Forum in the Baffin by virtue of its relevance to bilingual education in general and by its role as the underpinning for the *Piniaqtavut* program of studies that shaped much of Baffin education in the 1990s, it gains additional relevance through its adaptation to the online environment created by the Internet. Building out from the work of Celestin Freinet in France in the 1920s and Bruno Ciardi and and Mario Lodi in Italy in the 1950s and 60s, Cummins and Sayers (1995) develop a "collaborative critical enquiry" in which technology is used to mediate what Giroux (1992) calls border pedagogy, that is, pedagogy in which educators and students cross political, ideological, and cultural borders in order to create borderlands "in which the very production and acquisition of knowledge is being used by students to rewrite their own histories, identities, and learning possibilities" (p. 30). For Freinet this involved using a moveable-type printing press (technology) and an interschool network and student journalism (pedagogical structures) to create an environment in which students thoughtfully and actively engaged the different ideas, values, and

points of view of their peers in other locations; Ciardi and Lodi did much the same thing, with the typewriter and mimeograph replacing the printing press as the enabling technology. With these as models, Cummins and Sayers extend the framework of the intervention for collaborative empowerment to the Internet, with its growing ubiquity and unprecedented combination of speed, adaptability and interactivity. They argue that

> As the infrastructure of the information superhighway is being erected, we have to opportunity to ensure that all North American students have freedom of access and freedom of movement to explore forms of learning and thinking that have the potential to transform their lives. We are not suggesting that access to the Internet by itself is sufficient to increase students' learning opportunities. However, we believe that when access to communities of learning is combined with forms of teacher-student interaction that are very different from those that exist in most schools today, there are immense possibilities for expanding students' intellectual, cultural, and political horizons. (Cummins & Sayers, 1995, p. 85)

and cite several examples in which computer-mediated communication enables students to challenge and extend their views of the world. In the Baffin context, the use of the AGE to allow students in Grise Fiord and Martha's Vineyard to contrast very different concepts of immigration or the use of Takujaksat to allow students from across the Baffin to contrast the views of the "high arctic exiles" as expressed in the mainstream media with those of some of the exiles themselves demonstrate the rudiments of these possibilities. However, as outlined above, these examples were more the exception in the use of the resource than we would have liked to see. Ironically perhaps, the intervention hints at the reasons for this as well.

An Inherent Requirement for Educator Self-Transformation

One of the strengths of the intervention for collaborative empowerment is its potential role as a "dialogue that brings together what is seen from outside and what is felt from inside." (Cummins, 2000, p. 1) In the former capacity it subsumes and rises above a vast amount of

research data about bilingual education; in the latter capacity it does the same for the experiences of numbers of educators who are struggling to make sense of increasingly complex and challenging educational situations, something indicated as much by what I felt as the resonance of the intervention and my own successes as an educator in the Baffin as by the numbers of practices that Cummins uses as examples of the intervention in action. Of critical importance in this dialogue is that much of "what is felt from inside" as successful cross-cultural educational experiences developed independently of the theory. As I indicated earlier, the theory provides a form of external validation for what a number of northern educators felt was intrinsically right in our practices. It also provides a framework for understanding that tacit knowledge more deeply and for trying to move beyond the personal "what feels right" to support the achievement of minority students to more systematic personal and systemic efforts for further success, something embodied in the creation of *Piniaqtavut*. There is, however, a gap between theory as a dialogue with practice, and theory, even when congruent with current practice, as a guide to structure future practice. While hints of that gap are embedded in the framework of the intervention, they may be overlooked and therefore need to be brought forward explicitly.

At the heart of that gap lies a certain ambivalence about the pervasiveness of the coercive power structures of the wider society and the determinism that implies on one hand, and the potential for educators to resist on the other. Cummins notes,

> A central assumption of the present analysis is that implementation of genuine educational reform aimed at reversing centuries of discrimination requires *personal redefinitions* of the ways in which *individual educators* interact with the students and communities they serve. In other words, legislative and policy reforms aimed at changing educational structures may be necessary conditions for effective change, but they are not sufficient. Implementation of change is dependent on the extent to which educators, both collectively and individually, redefine their roles with respect to culturally diverse students and communities. This is the deep structure of educational reform. (Cummins, 2001, p. 199)

The words "personal" and "individual" emphasize the agency of each educator as a force for or against the processes of a wider society that tend to contribute to the disproportionate rate of failure of minority students. Cummins goes on to note:

> Although educational and social structures will impose constraints on resistance, these structures can never stifle the pursuit of empowering interactions on the part of educators and students. In short, educators always have options in the way they negotiate identities with students and communities. (Cummins, 2001, p. 203)

Although later acknowledging that "genuine educational reform requires that innovations permeate and transform the entire culture of the school" (Cummins, 2001, p. 226), this assertion of the agency of individual educators in renegotiating the classroom ignores the magnitude of the effort that may be required. To a large extent educators have succeeded in becoming educators precisely because they have responded appropriately to the same coercive structures that contribute to the failure of minority students. Exercising the option to negotiate identities with students and communities that run counter to the processes of the wider society requires educators in the Baffin, for the most part members of the dominant group, to identify, confront, and change the knowledge, skills, and attitudes that have been internalized over nearly twenty years of formal education and reinforced both by the majority of educational structures and by the macro-interactions of the wider society. Reversing these coercive structures in the micro-interactional space where identities are negotiated in the classroom requires, in effect, that most educators engage in a process of renegotiating their own identities, in other words, that they engage in their own transformational processes. For me at least, and I suspect for most educators, this is a huge and threatening challenge. It is also one that requires an active and continuing effort. Further, if the educational success of culturally diverse students depends on the extent to which the patterns of interaction in school challenge and reverse those that prevail in the society at large and the role of the educator is critical in establishing that reversal through the

collaborative negotiation of identities in the micro-interactions of the classroom, the potential of the intervention for collaborative empowerment as a framework for action as opposed to explanation hinges on the extent to which educators can engage in processes of personal and critical transformation. The likelihood of that is encapsulated for me in the response of one experienced northern principal to the *Piniaqtavut* inservice. Deciding that the requested day for joint planning could be reduced by half, and in reviewing the components of interactive-experiential pedagogy he remarked, "But we do all that!" "Doing all that" doesn't necessarily imply that "all that we are doing" needn't or can't be examined and improved, something that must lie at the heart of any transformational process.

Where the Intervention for Collaborative Empowerment and Knowledge Building Intersect

In the previous chapter I outlined the personal and professional journeys that led to networked computer technology in general and CSILE/Knowledge Forum in particular as potentially valuable components of the cross-cultural school system of the Baffin. The first part of this chapter links those journeys more explicitly to the issues of language, culture, and power that challenge schooling in the Baffin. It outlines their connection to Cummins' intervention for collaborative empowerment and to the potential for computer networks to contribute to this process through the framework for critical collaborative inquiry. To varying extents the Baffin Writers' Project, Apple Global Education Network, and *Takujaksat* all demonstrate the potential of computer technology to challenge coercive power structures of the wider society through the collaborative creation of power in the micro-interactions they facilitated in schools. However, the progressively more open-ended possibilities for each technology seemed accompanied by proportionately less transformational applications, something which was linked back to the

possible need for educators from a dominant group to be engaged in processes of personal transformation before they could effectively create learning experiences based on transformational pedagogy for minority students. A lack of educator engagement in personal transformation may be a reason that as the projects and the technologies that supported them became both more open-ended and widely accessible, they became proportionately less likely to involve transformational learning experiences for students. Fewer restrictions meant and wider accessibility simply meant that these initiatives found themselves more open to cooptation within the dominant paradigms, those of non-Inuit teachers.

Reversing this trend and addressing the question originally posed in Chapter 1, that is, "To what extent can CSILE/Knowledge Forum technology and knowledge-building pedagogy contribute to the reconciliation of traditional Inuit beliefs and values with the requirements of a modern school system to address the needs of Nunavut in the 21st century," therefore has two parts. The first involves the extent to which the CSILE/Knowledge Forum technology provides a superior scaffold for the construction of transformational experiences for students. The second is the extent to which it might contribute to the transformation of teacher role definitions.

CSILE/Knowledge Forum and Transformational Pedagogy

As a software environment with what appeared to be an intrinsic congruence with the pedagogies advocated by *Piniaqtavut*, CSILE/Knowledge Forum was initially and primarily implemented in the Baffin because of its potential to refocus the demonstrated potential of networked technologies on the specific challenges facing education there. Table 3.3 outlines how we expected it to support the interactive/experiential approaches advocated by *Piniaqtavut*.

Table 3.3. Use of CSILE/Knowledge Forum to reinforce the interactive/experiential approaches advocated by *Piniaqtavut*.

Interactive/ Experiential Approach	Expected application of CSILE/Knowledge Forum to *Piniaqtavut*
Genuine oral and written student-teacher dialogue	Student-teacher written dialogue in the database focuses around culturally relevant themes selected from *Piniaqtavut* or jointly negotiated by students and educators.
Teacher facilitation versus control	Teacher is the "expert learner" who facilitates and models processes of investigation by contributing questions and comments to a shared database.
Collaborative student-student talk	CSILE/Knowledge Forum database provides a written adjunct to reflect and extend classroom discussion.
Meaningful language use versus surface correctness	Language is the critical tool for the exploration of a topic in a CSILE/Knowledge Forum database. Scaffolds, problem fields, and titles continually reinforce its use in this capacity.
Conscious integration of language	A CSILE/Knowledge Forum database provides a persistent and relevant bank of student-generated examples around which discussion of language and vocabulary can take place.
Focus on higher level cognitive skills	The public database and integrated software tools reinforce evaluation and synthesis through critical reading, commenting, and revision. See Table 3.4.
Task presentation for intrinsic motivation	CSILE/Knowledge Forum environment encourages the presentation of tasks as elements of collective problems that require collaborative solutions.

While Table 3.3 illustrates the congruence of CSILE/Knowledge Forum and the interactive/experiential approaches, it is the focus on higher level cognitive skills that sets CSILE/Knowledge Forum apart from alternative technologies. Table 3.4 illustrates how specific elements of CSILE/Knowledge Forum could be expected to support the cognitive engagement and identity investment that the intervention for collaborative empowerment deems critical for the academic success of minority language students.

Table 3.4 CSILE/Knowledge Forum software features that support cognitive engagement and identity investment in learning by minority language students.

Cognitive engagement	• reading and writing support purposeful investigations • scaffolds support development of higher level discourse • graphics and hypermedia tools support multiple representations of knowledge • problem fields and keyword tools support metacognition • public database encourages critical peer commentary • editable notes encourage critical application of commentary to revision • student-created database provides comprehensible input • open database encourages reading and sharing
Identity investment	• empty database encourages topics selected by teachers and students for their intrinsic interest and contribution of locally obtained knowledge • student-created database contributes to a sense of ownership • integrated graphics tools support an alternative means to creative expression

Evaluation of CSILE/Knowledge Forum in this context would seem to be a relatively straightforward examination of classroom databases to determine the extent to which this potential was realized.

The second part of its role, that of contributing to teacher transformation, is at once deeper and more subtle. Originating with a 1983 attempt to manageably shift the cognitive responsibility for reflection from the instructor to students (Scardamalia, 2002) and developed on a strong empirical research base since then, CSILE/Knowledge Forum embodies a particularly powerful set of cultural values and an emerging theoretical framework first labeled "knowledge building" in about 1987 (Bereiter, 2002a). With philosophical links to the Popper's (1972) notion of knowledge as an object formally articulated in 1994 (Scardamalia, Bereiter, & Lamon, 1994), knowledge building began to see the progressive advance of collective understanding through the joint construction of knowledge objects rather than individual learning as the goal of education in the twenty-first century and also as a function of the workplace. As part of a collaborative international effort to investigate the significance and possibilities of knowledge building, CSILE/Knowledge Forum's development has resulted in technological affordances that support socio-cognitive knowledge building processes. Implicit in these processes is the potential to address the need for personal educator transformation that I argue may be critical for transformational cross-cultural classrooms.

One of the truisms often applied to the use of technology in education is that it is "just a tool," the implication being that it is a neutral instrument to accomplish a task. Another truism, "If you only have a hammer, every problem looks like a nail," belies this, pointing out that the tools we have shape the way we see the world. This is particularly salient in a cross-cultural context where a technology may bring with it values invisible to the culture introducing it and

have unanticipated effects on and implications for the culture that adopts it (Bowers, 1988; Newman, 1990a; Newman, Griffin, & Cole, 1989; Schofield, 1995). The premise that no technology is neutral applies to any technology, regardless of how innocuous it seems, but it is particularly relevant to a technology such as CSILE/Knowledge Forum in which cultural biases about the creation of knowledge are deeply and explicitly embedded. The question arises, then, as to the extent to which the cultural and epistemological biases of CSILE/Knowledge Forum are congruent with the educational culture to which it was introduced in the Baffin in 1992. This requires a more thorough look at knowledge building, particularly its theoretical underpinnings and their relationship to the theoretical underpinnings of the pedagogies predating it in the Baffin.

Knowledge Building, CSILE/Knowledge Forum, and Classroom Transformation

> When I show educators examples of students' genuine, sustained efforts to construct real knowledge, someone almost always remarks, "That's fine for students who are motivated, but what about...?" and there follows one of those shrugs or evasive mumbles that are meant to convey that we all know what kind of kids we are talking about although it is no longer safe to label them. (Bereiter, 2002b, p. 22)

I was panicking. Peter Gzowski was to interview Marlene Scardamalia and me for a CBC Morningside piece on CSILE/Knowledge Forum and the technician at the CBC studio in Iqaluit could not make the outgoing connection to the network. When the glitch was finally tracked down and eliminated well into the interview, I was parachuted in to hear Gzowski comment that knowledge-building sounded a lot like what would have been called cheating when he went to school and ask me to explain what a CSILE/Knowledge Forum classroom looked like. For a long moment I found myself at a loss for words. I had no real idea what his vision of a regular classroom was and if, as his question implied, he envisioned it as the cliché transmission

classroom with the teacher in front at a blackboard with students sitting in neat rows, he would have difficulty understanding the difference between that and a more progressive activity-based classroom, let alone distinguishing between the latter and a classroom structured around knowledge building. I was further hampered by the fact that although we appeared to be progressing towards some knowledge building classrooms, our experience to that point had largely been confined to promising episodes as opposed to some all-encompassing epiphanic transformation. I hesitated, then assuming that as a person with a keen interest in literacy education he had at least some familiarity with modern classrooms, commented that he probably wouldn't notice too much superficial difference other than a pod of four or five networked computers in a corner. I then proceeded to describe how the CSILE/Knowledge Forum teacher would use those computers as a work centre to which students rotated to contribute to a sustained collective investigation. Whether my explanation was adequate to make clear to Gzowski the distinction between cheating and knowledge building[5], my difficulty in formulating an explanation points out the need to have a common sense of what a classroom is before trying to explain what it might be or should be. Since we've already discussed them, let's use Cummins' traditional, progressive, and transformational pedagogies as the starting point from which to begin to frame knowledge building in education.

To be stereotypically simplistic, if we imagine a traditional classroom we probably imagine something that involves students sitting in rows attending to a presentation at the front of the class or completing seatwork. This probably resembles what Gzowski had in mind when he talked about cheating as the goal in this context is for each student to fill his or her mind with

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[5] Whether I did or not, two years later Gzowski visited a CSILE/Knowledge Forum classroom like those described in Chapters 1 and 4 and had the opportunity to see the differences between cheating and knowledge building for himself.

what the teacher tells them is important and to be assessed according to what is or is not in there: to ask another student to supply you with something that is not in your mind is breaking the rules. The progressive classroom's emphasis on the social construction of knowledge may produce something that looks very different from a traditional classroom—students may be working in small groups at a variety of centres around the classroom, for example, and the teacher may be circulating among them to help with difficulties as they arise—but the underlying goal is still the same: to get knowledge into students' heads. Even if strategies such as cooperative learning are employed to create the positive interdependence that makes all group members responsible to ensure their peers perform the to best of their abilities, the emphasis still rests on what individuals learn. The process by which students get the curriculum into their heads has changed, but not the idea that each student's success is ultimately defined by the extent to which s/he does that. It is this idea of the mind as a container and the corresponding view of knowledge, however acquired, as something in that container that knowledge building challenges.

Although it has roots that go back more than a century, knowledge building as an emergent educational concept was brought into being about 1987 (Bereiter, 2002a). Emerging in part from advances in cognitive science, specifically a growing understanding of how expertise develops in writing (Bereiter & Scardamalia, 1987) and how networked computer environments might be designed to support these processes (Scardamalia, Bereiter, McLean, Swallow, & Woodruff, 1989), knowledge building also derives from the premise that the concepts of mind as a container of knowledge and knowledge as something contained in the mind are inadequate for schools preparing students for a knowledge society, that is, a society in which knowledge is created and worked with much as was done with manufactured goods in the industrial age and

food in the agrarian age (Bereiter, 2002a, 2002b; Scardamalia & Bereiter, 1996 November; Scardamalia & Bereiter, 2002; Scardamalia et al., 1994).

A connectionist view of the mind as an emergent, self-organizing, sense-making network provides an alternative metaphor to the mind-as-container that enables mind and knowledge to be considered as separate entities. Once extricated from the mind, knowledge expands from the statable (knowing that) and procedural (knowing how) categories to which it is often confined to include implicit, impressionistic, episodic, and regulative dimensions at the personal level, but also to include group knowledge and knowledge embedded in tools at the trans-personal level. Knowledge apart from the mind is more easily considered as something that can be manipulated and worked with much as one does with physical objects and consequently knowledge production may be considered a social activity distinct from learning (Bereiter, 2002a).

Knowledge building's framework for dealing with knowledge as something existing apart from the mind derives from Popper's (1972) distinction between three worlds. World 1 is the physical world. World 2 is the subjective or mental world. The concepts of mind as container and knowledge as something in it are rooted in World 2. World 3 is the world of ideas, or "the world of *objective contents of thought*, especially of scientific and poetic thoughts and works of art" (Popper, 1972, p. 106). The "objective contents of thought" are conceptual artifacts such as "ideas, facts, theories, algorithms, designs, problem formulations, and problem solutions" (Bereiter, 2002a, p. 64) that serve to explain or predict (p. 58). With respect to the role of knowledge in a knowledge age, the existence of World 3 has three main implications:

> "First, the contents of World 3 are entirely human creations. Second, these human creations, like other human creations, are fallible but improvable. Thus, knowledge becomes, in Popper's view, something you can work with. Finally, and most controversially, these human creations take on a life of their own, independent of their creators. They can be found to have characteristics, virtues and faults, implications and applications, that their creators could not have foreseen." (Bereiter, 2002a, p. 64)

World 3 therefore adds a third dimension to the two-dimensional physical/subjective construct and to use a World 1 analogy, much as a high point on the terrain might give people who are lost a place from which to orient themselves, World 3 can provide people who are trying to make sense of Worlds 1 and 2 a vantage from which to do so. If the core activity of schooling is "to help students build a comprehensive and coherent understanding of the world" (Bereiter, 2002a, p. 242), in a knowledge society enculturation into World 3 is or should be central to that activity. Knowledge building, then, is the process through which students become enculturated into World 3 through the creation and progressive refinement of conceptual artifacts.

CSILE /Knowledge Forum is a collaborative client-server software environment designed to support the concept of knowledge as collaboratively created and improvable objects by providing software tools that facilitate its creation and improvement. Participants begin by contributing questions or problems to an empty database by means of electronic notes submitted to views. Notes are owned by their contributors but can be read and commented on by anyone participating in the database. As notes multiply, diverge conceptually and begin to crowd a view, participants can select related notes and move them to new views for more focused exploration. Discourse prompts or scaffolds, keywords, and problem fields provide participants with a framework both to structure their contributions and, because they are searchable, find related contributions across views as the database grows. An additional tool called a "Rise-Above" provides a means to support the synthesis of any number of related contributions into a new understanding. Working as designed, CSILE/Knowledge Forum provides a networked computer environment that reifies and facilitates the processes of working with and creating knowledge. To return to Gzowski's question, knowledge building is not cheating because the goal is to

enhance the group's understanding of the world (understanding being defined as a relationship between the knower and the known with the potential for intelligent action (Bereiter 2002a, p. 112)) through the collaborative creation of knowledge in World 3.

In terms of their implications for schooling, knowledge building and the intervention for collaborative empowerment incorporate similar characterizations of current classrooms. To a large extent, Cummins' traditional pedagogy corresponds to the traditional school requested by the parents of high-achieving Asian students in Richmond, British Columbia, featuring "high standards, emphasis on basic skills and traditional academic subjects, discipline and decorum, hard work, and lots of testing" (Bereiter, 2002a, p. 214). Both are examples of Bereiter's first pillar of conventional pedagogy, reduction to subject matter (2002a, p. 267). The insipid liberalism of Cummins' progressive classroom corresponds to what Bereiter labels the standard classroom and probably reflects the target pedagogy of the majority of Canadian classrooms. This pair exemplifies Bereiter's final two pillars of conventional pedagogy, reduction to activities and reduction to self-expression. Neither the traditional nor the progressive/standard classroom is likely to be profoundly successful with Inuit students in the Baffin, the first reflecting what I called in Chapter 1 "just teaching" and the second having the potential to become the "overwhelming emphasis on self-esteem." While the two perspectives may agree in broad terms with respect to their dissatisfaction with the current two dominant alternatives in schooling, they diverge in terms of the reasons for their dissatisfaction and the alternatives they propose.

The intervention for collaborative empowerment has as its goal reversing the disproportionate rate of failure of minority students and is based on a social analysis that locates the reason for this failure in the coercive exercise of power inherent in the macro-interactions of

society. Unacknowledged and unaddressed, that coercive exercise of power tends to be replicated in micro-interactions between teachers and students in diverse classrooms that undermine the identity investment of minority students in learning and contributes to lower achievement. The four-part intervention proposes a framework through which educators may challenge the power structures of the wider society through restructuring the micro-interactions of the classroom to enable maximum cognitive engagement and identity investment of students. Inherent in this restructuring is the shift through a process of negotiation of the locus of power in the classroom from the teacher to a space between the teacher and students. The net result is the collaborative creation of power.

Knowledge building, on the other hand, is rooted in a more general dissatisfaction with schooling, one that arises from the perceived inability of existing pedagogies to prepare young people for a knowledge society. Perhaps the main challenge to changing these pedagogies is a folk conception of mind and knowledge that makes it difficult, if not impossible, to frame and discuss how things might be different. Knowledge building pedagogy, then, is built on a philosophical and psychological reconceptualization of mind and knowledge that makes it possible to discuss how schooling for a knowledge society might differ from what presently exists. Key in this discussion is the idea of knowledge existing apart from the mind and something that can be worked with. The net result of knowledge building is the collaborative creation of knowledge.

Given that both the intervention for collaborative empowerment and knowledge building lie behind the use of CSILE/Knowledge Forum in the Baffin, the question at this point is whether the collaborative creation of power that is the goal of the former and the collaborative creation of knowledge that is the goal of the latter are compatible and, if so, how. I believe that at the

theoretical level they are and, further, that each brings something lacking in the other to the mix. Specifically, the intervention for collaborative empowerment brings to knowledge building an explicit focus on minority language and culture and social justice and the conditions under which they can reshape the micro-interactions of the classroom in opposition to the disempowering macro-interactions of the wider society. This is an essential contribution to education for a knowledge society in an increasingly global context. For its part, knowledge building has as its focus the creation of knowledge and the classroom structures to enable that. Not a prescription, however, knowledge building has a reflexive element that makes the micro-interactions of the classroom as much the objects of enquiry as the questions and investigations pursued by the students. A knowledge-building teacher is therefore engaged in a process of personal professional transformation, something the intervention for collaborative empowerment does not seem to recognize as necessary. If the micro-interactions of the classroom are in fact the sites for resistance to or replication of the coercive power structures of the wider society, a cross-cultural education system such as the Baffin that does not support ongoing critical self-examination by the majority of educators that comes from a dominant group different from the majority of students can only be supporting a process of cultural imperialism.

While the basic framework for the intervention for collaborative empowerment was first articulated nearly twenty years ago (Cummins, 1986) knowledge building is a more recent concept and one that is still emerging. Any attempt at synthesis must therefore be considered exploratory and tentative at best. Nevertheless, if the potential contribution each may have for the other is to have any chance of existing in practice, some kind of theoretical synthesis should be possible as well. To frame this synthesis, I'm going to begin with the twelve knowledge building principles that represent the current state of the effort to ground knowledge building

theory in the sociocultural realities of the classroom and the technological affordances of CSILE/Knowledge Forum.

Table 3.5 brings together the most recent version of those twelve principles (Scardamalia, 2002). While the principles, their socio-cultural dynamics, and the technological dynamics of CSILE/Knowledge Forum that support them are reproduced verbatim, the underlying grid of Ideas, Agency, and Community are my addition. Not the attempt to "dumb down" the principles for popular consumption that seems to be the fate of many other educational innovations, the grid is my effort to provide an underlying structure to help make sense of what otherwise might be a confusing number of principles without reducing their number.[6]

Table 3.5 Knowledge building principles

	Principle	Socio-cognitive dynamic	Technological dynamic
Ideas	**Real ideas, authentic problems**	Knowledge problems arise from efforts to understand the world. Ideas produced or appropriated are as real as things touched and felt. Problems are ones that learners really care about—usually very different from textbook problems and puzzles.	Knowledge Forum creates a culture for creative work with ideas. Notes and views serve as direct reflections of the core work of the organization and of the ideas of its creators.

[6] To create this grid I grouped the twelve principles according to what seemed to me to belong together, then labeled each group with what seemed to be the common unifying concept. Interestingly enough, the groups seem to fall into what might be considered a grammar for knowledge building: who (community) does (agency) what (ideas). Of course, if one grants the autonomy of World 3, one might wish to reverse the grammar: who (ideas) does (agency) what (community).

So far I have attempted to evaluate this framework for the principles only by means of an informal discussion with teachers seeking to learn about the principles as a way of understanding how they could create knowledge building classrooms. They seemed to like it. An interesting study might be to have different groups use a similar process to develop categories of their own, and perhaps look for a correlation between such things as culture or orientation to pedagogy and the patterns they produce.

Improvable ideas	All ideas are treated as improvable. Participants work continuously to improve the quality, coherence, and utility of ideas. For such work to prosper, the culture must be one of psychological safety, so that people feel safe in taking risks—revealing ignorance, voicing half-baked notions, giving and receiving criticism.	Knowledge Forum supports recursion in all aspects of its design—there is always a higher level, there is always opportunity to revise. Background operations reflect change: continual improvement, revision, theory refinement.
Idea diversity	Idea diversity is essential to the development of knowledge advancement, just as biodiversity is essential to the success of an ecosystem. To understand an idea is to understand the ideas that surround it, including those that stand in contrast to it. Idea diversity creates a rich environment for ideas to evolve into new and more refined forms.	Bulletin boards, discussion forums, and so forth, provide opportunities for diversity of ideas but they only weakly support interaction of ideas. In *Knowledge Forum*, facilities for linking ideas and for bringing different combinations of ideas together in different notes and views promote the interaction that makes productive use of diversity.
Rise Above	Creative knowledge building entails working toward more inclusive principles and higher-level formulations of problems. It means learning to work with diversity, complexity and messiness, and out of that achieve new syntheses. By moving to higher planes of understanding knowledge builders transcend trivialities and oversimplifications and move beyond current best practices.	In expert knowledge building teams, as in *Knowledge Forum*, conditions to which people adapt change as a result of the successes of other people in the environment. Adapting means adapting to a progressive set of conditions that keep raising the bar. Rise-above notes and views support unlimited embedding of ideas in increasingly advanced structures, and support emergent rather than fixed goals.

Embedded, concurrent, and transformative assessment	Assessment is part of the effort to advance knowledge—it is used to identify problems as the work proceeds and is embedded in the day-to-day workings of the organization. The community engages in its own internal assessment, which is both more fine-tuned and rigorous than external assessment, and serves to ensure that the community's work will exceed the expectations of external assessors.	Standards and benchmarks are objects of discourse in Knowledge Forum, to be annotated, built on, and risen above. Increases in literacy, twenty-first-century skills, and productivity are by-products of mainline knowledge work, and advance in parallel.
Constructive use of authoritative sources	To know a discipline is to be in touch with the present state and growing edge of knowledge in the field. This requires respect and understanding of authoritative sources, combined with a critical stance toward them.	Knowledge Forum encourages participants to use authoritative sources, along with other information sources, as data for their own knowledge building and idea-improving processes. Participants are encouraged to contribute new information to central resources, to reference and build-on authoritative sources; bibliographies are generated automatically from referenced resources.
Knowledge-building discourse	The discourse of knowledge building communities results in more than the sharing of knowledge; the knowledge itself is refined and transformed through the discursive practices of the community—practices that have the advancement of knowledge as their explicit goal.	Knowledge Forum supports rich intertextual and inter-team notes and views and emergent rather than predetermined goals and workspaces. Revision, reference, and annotation further encourage participants to identify shared problems and gaps in understanding and to advance understanding beyond the level of the most knowledgeable individual.
Epistemic Agency	Participants set forth their ideas and negotiate a fit between personal ideas and ideas of others, using contrasts to spark and sustain knowledge advancement rather than depending on others to chart that course for them. They deal with problems of goals, motivation, evaluation, and long-range planning that are normally left to teachers or managers.	Knowledge Forum provides support for theory construction and refinement and for viewing ideas in the context of related but different ideas. Scaffolds for high-level knowledge processes are reflected in the use and variety of epistemological terms (such as conjecture, wonder, hypothesize, and so forth), and in the corresponding growth in conceptual content.

Agency

Pervasive knowledge building	Knowledge building is not confined to particular occasions or subjects but pervades mental life—in and out of school.	Knowledge Forum encourages knowledge building as the central and guiding force of the community's mission, not as an add-on. Contributions to collective resources reflect all aspects of knowledge work.
Democratizing knowledge	All participants are legitimate contributors to the shared goals of the community; all take pride in knowledge advances achieved by the group. The diversity and divisional differences represented in any organization do not lead to separations along knowledge have/have-not or innovator/non-innovator lines. All are empowered to engage in knowledge innovation.	There is a way into the central knowledge space for all participants; analytic tools allow participants to assess evenness of contributions and other indicators of the extent to which all members do their part in a joint enterprise.
Symmetric knowledge advancement	Expertise is distributed within and between communities. Symmetry in knowledge advancement results from knowledge exchange and from the fact that to give knowledge is to get knowledge.	Knowledge Forum supports virtual visits and the co-construction of views across teams, both within and between communities. Extended communities serve to embed ideas in increasingly broad social contexts. Symmetry in knowledge work is directly reflected in the flow and reworking of information across views and databases of different teams and communities.
Community knowledge, collective responsibility	Contributions to shared, top-level goals of the organization are prized and rewarded as much as individual achievements. Team members produce ideas of value to others and share responsibility for the overall advancement of knowledge in the community.	Knowledge Forum's open, collaborative workspace holds conceptual artifacts that are contributed by community members. Community membership is defined in terms of reading and building-on the notes of others, ensuring that views are informative and helpful for the community, linking views in ways that demonstrate view interrelationships. More generally, effectiveness of the community is gauged by the extent to which all participants share responsibility for the highest levels of the organization's knowledge work.

Community

Although validated at this point only by my own thinking and some informal discussions with teachers interested in the implications of the principles on their efforts to create knowledge building classrooms, what seems particularly interesting about the grid is its partial correlation to Cummins' intervention for collaborative empowerment. As Table 3.6 shows by correlating the characteristics of the intervention for collaborative empowerment and knowledge building

principles with the concepts of community, agency, and ideas, the additive cultural linguistic incorporation and the community participation of the intervention for collaborative empowerment parallel aspects of community in the knowledge-building principles. Similarly, advocative assessment and transformative pedagogy parallel aspects of agency. Finally, while the intervention for collaborative empowerment has no explicit parallel to the knowledge building's emphasis on ideas, as discussed earlier it does put the construction of knowledge as an essential element of transformative pedagogy and, more specifically, construction of knowledge that will "enable students to relate curriculum content to their individual and collective experience and to analyze broader social issues relevant to their lives" (Cummins, 2001, p. 222). In other words, constructing knowledge for the collaborative empowerment of minority students must involve working with ideas about social justice and the unequal distribution of power in society and how it is exercised.

Table 3.6 The relationship between the intervention for collaborative empowerment and knowledge building principles

	Intervention for collaborative empowerment	**Knowledge building principles**
Community	• Additive cultural/linguistic orientation • Community participation	• Pervasive knowledge building • Democratizing knowledge • Symmetric knowledge advancement • Community knowledge, collective responsibility
Agency	• Advocative assessment • Transformative pedagogy	• Embedded, concurrent, and transformative assessment • Constructive use of authoritative sources • Knowledge building discourse • Epistemic agency
Ideas	• social justice • power structures • knowledge construction	• Real ideas, authentic problems • Improvable ideas • Idea diversity • Rise above

While these parallels suggest that an implementation of knowledge building may be possible within the cross-cultural pedagogy of the intervention for collaborative empowerment and *Piniaqtavut,* a more intriguing connection suggests itself in the emerging concept of "collective

cognitive responsibility," that is, "the condition in which responsibility for the success of a group is distributed across all members rather than being concentrated in the leader" (Scardamalia, 2002, p. 68) with the added dimension that all members of the group take responsibility for understanding the process as a whole. In the classroom this has two main implications. First, it implies that students will take on more responsibility for the executive functions of the classroom: selecting topics for investigation, setting goals, identifying, assigning, and monitoring tasks and so on, traditionally responsibilities reserved for the teacher. Second, it implies that the teacher will assume similar responsibilities from the educational system, moving beyond the classroom walls to take on a stronger role in areas such as school programming and staff development. The former implication creates a framework for the negotiation of identities that lies at the heart of the intervention for collaborative empowerment. The latter creates the space for educator self-transformation and, perhaps, a space for negotiating the intersection of educator role definitions within the larger educational structures.

A Symmetric Knowledge Advance

One key idea about the knowledge society emerging from the knowledge building principles that focus on community is that engagement in a democratic knowledge society should not be restricted to an elite minority, but should involve productive cross-sector, cross-age, cross-cultural collaboration to create knowledge that benefits all parties. As a somewhat trivial example, I am reminded of the story of the housewife who triumphed over innumerable professional engineers in a contest to retool a rolling mill for the production of steel half the thickness of that currently being produced. Her solution? Feed the existing production back through the mill two at a time. Whether the story is true is irrelevant: it illustrates the potential

for the expertise distributed between very different communities to contribute to symmetric knowledge advances. The parallels between the intervention for collaborative empowerment and knowledge building outlined above are not meant to imply that the two are the same, but rather to serve as a point of departure to consider how the juxtaposition of the two might contribute to a symmetric knowledge advance, that is, how each might inform the other.

On the one hand as I offered earlier, if the intervention for collaborative empowerment overlooks the need for processes of personal transformation on the part of educators who seek to establish transformational classrooms and the magnitude of the challenge to establish and sustain those processes, knowledge building and CSILE/Knowledge Forum may provide a scaffold to help address these issues. Certainly the process of setting up a knowledge-building classroom is potentially a transformational one and as a software environment that embodies the underlying principles of knowledge building, CSILE/Knowledge Forum may help support and sustain that transformative process.

On the other hand, knowledge building may benefit from the explicit emphasis of the intervention for collaborative empowerment on the need to explore and understand the relationship between the exercise of power in the macro-interactions of society and the micro-interactions of the classroom. The conceptual separation of knowledge and mind provides a framework for knowing that allows for alternatives such as traditional indigenous knowledge (Bereiter, 2002a), something clearly of importance for education in the eastern arctic where traditional knowledge is one of the foundations of Inuit culture. Further, the existence of World 3 means that the claims of traditional knowledge can be evaluated against competing claims of other ways of knowing "through a reasonable process of negotiation" (p. 167). The problem is, of course, that negotiations in World 1 may not be reasonable although they will probably always

appear to be so to someone negotiating from a position of power. A similar naïveté lies behind the analysis of trade, "one of the marvels of human history" (p. 167). You may want yams, and I may want chickens and there may in fact be a way to make a deal, but sometimes it's just easier for the stronger person to take what they want. Any system of negotiation blind to at least the possibility of asymmetries of power affecting the outcome is fundamentally and severely deficient, ripe for abuses of power. A recent example of this is the debate on the court decision about Treaty 8[7] that hinged on the validity of oral versus written evidence. Although it's possible to see the court decision to overturn a previous judgment that had acceded to the validity of oral history as an attempt maintain the rules of evidence within a sensitive response to that oral history, it's equally possible to see it as an exercise of power by a dominant group that would be greatly discomfited by the changes to the tax system that the previous verdict would have required ("A test of oral history," 2003; Wiwa, 2003). To expect knowledge building to facilitate meaningful negotiations without explicitly acknowledging the role that asymmetries of power can play in skewing the results is naïve at best.

The problem is compounded by the recognition that teaching for understanding, touted as a sharable vision and therefore presumably congruent with knowledge building and schooling for a knowledge society (Bereiter, 2002a), is "not culturally neutral... it is strong stuff" (p. 243). Implementing strong stuff in a cross-cultural context without a framework that interrogates how the lack of cultural neutrality may have unintended and damaging effects is a frightening prospect and essentially the same one I encountered as a new teacher in the north. Simultaneous

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[7] Signed in 1899 by representatives of the Government of Canada and Aboriginal groups in western Canada, Treaty Eight gave over huge tracts of land to Canada and guaranteed reserve lands, annuities, farm equipment, ammunition, relief in hard times and hunting and fishing rights for the Aboriginal groups. In 2002, the treaty was amended on the basis of an interpretation of oral history to exempt the 30,000 treaty beneficiaries from paying tax on income earned off-reserve. The court decision was overturned in 2003.

recognition of the interplay between the large-D diversity embedded in the macro-interactions of society and the small-d diversity built on through the negotiation of identities at the classroom level is required. Without it, the accusation of knowledge building being fine for the gifted, or more likely, fine for the privileged or the dominant majority, is all too likely to become the case.

The symmetric knowledge advance I am proposing, then, brings the intervention for collaborative empowerment and knowledge building together around the desire to support a system of education that prepares Inuit students to take up meaningful roles in the knowledge society of the twenty-first century by building on and extending the language and culture that they bring with them to school. Moving outward from the disproportionate failure of minority students in schools to the underlying cause in the power structures of the wider society, and back to a process for countering these structures through the negotiation of identity at the classroom level, the intervention for collaborative empowerment gains from knowledge building a way to structure the knowledge construction that lies at the heart of transformative pedagogy. It also gains a supporting technology, CSILE/Knowledge Forum, compatible with improved academic achievement, previous experience, and the growing importance of computer networks in society. At a deeper level, while CSILE/Knowledge Forum and knowledge building provide a framework around which to structure the knowledge construction of transformative pedagogy, they also provide a framework around which educators can intentionally structure and interrogate their personal transformation as educators, something which I believe is critical for educators from a dominant group who seek to work successfully with minority students.

For its part, rather than looking to remedy the effects of the past, knowledge building focuses on the needs of the knowledge society of the future and builds on conceptions of education, mind, and knowledge that will advance the creation of classrooms to enable children

to adapt to those needs. Clustering around concepts of community, agency, and ideas, knowledge building's twelve emergent principles show a certain parallel to the framework of the intervention for collaborative empowerment, but the thinking behind them seems to minimize the importance of issues that the intervention deems critical to the success of minority students, specifically issues of power that manifest themselves in large-D diversity and how those issues play themselves out within the small-d diversity of the classroom.

Conclusion

Simply put, the academic success of Inuit students in the Baffin depends on maximizing their cognitive engagement and identity investment in schooling. However, unless acknowledged and resisted in the micro-interactions of the classroom, the dominant status of the majority *Qallunaat* educators is likely to undermine the identity investment of Inuit students by replicating the coercive power structures implicit in the macro-interactions of the wider society. Arguing that educators' role definitions can provide this point of resistance and create classroom space for the negotiation of identities between dominant and sub-dominant groups, the intervention for collaborative empowerment identifies additive cultural-linguistic incorporation, collaborative community participation, transformative pedagogy, and advocacy-based assessment as four axes around which to restructure these role definitions to maximize minority student chances for success. Given that educators from the dominant culture have for the most part succeeded in becoming educators by developing role definitions that accede to the dominant paradigm rather than resisting it and that a paradigm is normally invisible to those within it, the intervention for collaborative empowerment may be a much greater challenge to *Qallunaat* educators than the intervention acknowledges. Intrinsic to the effective application of the

intervention for collaborative environment, then, is a process for establishing a reflexive educator dialogue between theory and practice.

Originally implemented in the Baffin to build on promising uses of computer technology to support critical collaborative pedagogies, CSILE/Knowledge Forum brought a second developing theoretical framework to bear on the challenges to the success of Inuit students. The view of knowledge as conceptual artifacts that can be worked with and improved through collaborative processes, knowledge building provides a framework not only for students to engage the substance of their schooling, but also for educators to engage the substance of their pedagogy. In both cases, the creation of collective collaborative responsibility shifts the distribution of responsibility for the success of a community across its membership rather than concentrating it in a few leaders. Knowledge building therefore creates a framework for the decentralization of authority that is necessary for the negotiation of identities.

The compatibility of knowledge building and the intervention for collaborative empowerment is further suggested through underlying themes of community and agency. However, they differ in their respective emphases on diversity. In the knowledge building paradigm, one would hope that the small-d diversity of a class of students representing minority languages or cultures might lead to the interrogation of the large-D diversity of the wider society. Depending on the teacher, though, it might not. In the paradigm of the intervention for collaborative empowerment, on the other hand, explicit understanding and reference to the coercive exercise of power within the large-D diversity of the macro-interactions of society are necessary if they are to be challenged by the collaborative exercise of power within the small-d diversity of the micro-interactions of the classroom. This is particularly important within

classrooms such as those in the Baffin in which the majority of educators represent a minority culture with a disproportionate amount of power.

The next chapter explores the intersection of the intervention for collaborative empowerment, the CSILE/Knowledge Forum technology, and knowledge building in Baffin classrooms between 1992 and 2000. It looks first at the extent to which CSILE/Knowledge Forum supported *Piniaqtavut* and the intervention for collaborative empowerment and what that may have to say about the exercise of power in Baffin classrooms. It then looks at what knowledge building brought, or might have brought to that process.

Chapter 4

Illiniqatigiit

Introduction

Chapter 3 lays out the theoretical compatibility of the intervention for collaborative empowerment and knowledge building and links both to *Piniaqtavut*, the K-9 program of studies for schools in the Baffin intended to simultaneously affirm Inuit identity and promote academic achievement. It argues that this theoretical compatibility potentially represents a symmetric knowledge advance and a rise above, to use two knowledge building principles, by virtue of the fact that the juxtaposition of the two contributes to each something that neither had on its own. While suggestive, theoretical compatibility in no way implies compatibility in practice. That CSILE/Knowledge Forum might support *Piniaqtavut*, or that knowledge building might bring a structure to support an ongoing reflexivity in educators' practices that I argue may be essential to the success of a dominant group of educators attempting to create successful educational experiences for sub-dominant groups of students in no way indicates that they actually happened. Titled *Illiniqatigiit*, an Inuktitut word meaning "learning together," to embody the reflexive nature of a cross-cultural working environment implied in the negotiation of identities, the theory-practice dialogue outlined by Cummins (2000), and the collaborative creation of knowledge that lies at the heart of knowledge building, Chapter 4 will delineate the extent to which they did.

Order out of Chaos

Given the timeline and the number of teachers, students and schools involved with the implementation of CSILE/Knowledge Forum in the Baffin, imposing some cohesiveness on this process is a challenge. Many of the teachers and classrooms and virtually all of the schools could be case studies in and of themselves even if the scope was restricted to a single year or unit of study. Yet I feel there is merit in trying to grasp something of the meaning of the entire picture as opposed to any single part. We need then, first, to examine a sufficient period of time to assess the potential for CSILE/Knowledge Forum to support educator transformation and, second, to control at least somewhat the number of variables that might affect that transformation.

As Table 4.1 illustrates, CSILE/Knowledge Forum was used in up to ten different classrooms in four different Baffin schools each year between its first implementation in 1992 and its last use in 2000. Atausiq and Tisamat are Grades 7-12 schools, while Marruuk and Pingasut supported K-6. Atausiq, Marruuk, and Pingasut schools are located in the regional centre, a town growing from a population of about 3,000 in 1992 to nearly 5,000 in 2000. Tisamat school is located in a town of just over 1,000 approximately 400 kilometres to the north. Access from southern Canada to both communities is entirely by air except for a shipping season that generally lasts from late July to October. Travel between the two communities is almost entirely by air as well, although experienced travelers can make the journey by snowmobile after freeze-up. During the period of the study all schools used *Piniaqtavut* as the basis for K-9 programs of study. Students and educators at all schools had experience with computer-mediated communication via *Takujaksat*; those at Atausiq and Tisamat also had experience with the Baffin Writers' Project and the AGE. Dialup Internet connections first began to make a limited appearance in 1996, although *Takujaksat* had provided an email gateway to the Internet for the

prior two years. The majority of students at all four schools were Inuit, although the ratio of non-Inuit to Inuit students was larger at the three schools in the regional centre than it was at Tisamat school. The majority of Inuit students had had Inuktitut first language instruction from Grades 1-3 with increasing amounts of instruction in English after that and could therefore be considered functionally bilingual, although as I indicated in Chapter 2 and is consistent with the data on second-language acquisition there was often a large gap between their apparent conversational proficiency and their academic command of English. Non-Inuit students rarely had anything beyond a superficial knowledge of Inuktitut.

Table 4.1 Implementation of CSILE/Knowledge Forum in Baffin schools between 1992 and 2001.

Classes/Year	92-93	93-94	94-95	95-96	96-97	97-98	98-99	99-00	00-01
Atausiq	3	6	5	4	7				
Marruuk				1	2				
Pingasut			1	1	1	4	6	9	1
Tisamat		2	1	1					

The grey shading in Table 4.1 tracks the presence in the schools of Liz, the only person other than myself who worked with CSILE/Knowledge Forum for the full extent of its life in Baffin schools.[1] Whereas my initial role as a consultant for the BDBE and later as a researcher put me to a large extent outside the daily life of the school, her roles as assistant principal, program support teacher (PST), and classroom teacher put her in daily contact with the students and the other educators working with CSILE/Knowledge Forum. Evolving from an assistant principal/PST who could see the potential of CSILE/Knowledge Forum as another technological support for student learning at Atausiq school in the spring of 1992, to a classroom teacher at Marruuk school who "couldn't teach without it" in June 1997, to a staff member at Pingasut

[1] Since 2001 another initiative has brought to fruition an Inuktitut-language version of CSILE/Knowledge Forum. That version has yet to make an impression at the school level, however.

school who worked with the incumbent CSILE/Knowledge Forum teacher to catalyze staff and community support in 1999 to very nearly make CSILE/Knowledge Forum a part of every classroom before health reasons forced her resignation, Liz's involvement with CSILE/Knowledge Forum is characterized by ongoing growth. Although databases from other Baffin teachers demonstrate significant integration between CSILE/Knowledge Forum and *Piniaqtavut* or notable promise, no other teacher displayed as sustained growth over nearly the same length of time.

Between 1992 and 2000 Liz worked with CSILE/Knowledge Forum at three schools under at least four administrations primarily with Inuit students at nominal grade levels ranging from Grade Five to Grade Eight.[2] Despite shifting conditions that also included technical challenges, the same quantitative indicators that point to problematic aspects of CSILE/Knowledge Forum in other classrooms point to two significant consistencies in Liz's. First of all, Inuit students in her classes contributed comparable numbers of notes to the CSILE/Knowledge Forum database as *Qallunaat* students in her class or in others. Second, her classes' databases generally display greater equity of contribution, that is, less of a gap between the highest contributing students and the lowest. While a special withdrawal program had demonstrated in 1993-94 that a greater equity of contribution was a possibility, Liz's classes consistently actualized it. To use Brown's (1992) assessment of the conditions necessary for a successful design experiment, a focus on Liz's classrooms provides us with relatively smoothly

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[2] She worked with CSILE/Knowledge Forum with a primarily *Qallunaat* Grade 2 class during this period as well, but as she was out of the school for extended periods on medical leave, I am omitting this from the discussion. It's interesting to note, however, that while on medical leave and in the face of her substitute's lack of interest in the CSILE/Knowledge Forum environment Liz continued to support her students' CSILE/Knowledge Forum investigations by logging in to the database using a modem and an Apple Remote Access connection. That process contributed to the development of the remote access telementoring relationship that we developed the next year.

functioning learning environments that let us study things other than "the myriad possible ways that things can go wrong" (Brown, 1992).

In accordance with my desire to preserve something of the contextual reality of teaching and learning in the Baffin through the intersection of the developing role of knowledge building and the negotiation of identities at the heart of *Piniaqtavut*, the remainder of this chapter falls into two main parts. It begins with "a day in the life of a Baffin CSILE/Knowledge Forum teacher."[3] Pulling together many of the best practices emerging from the life of the project, it provides a window into what the day-to-day ebb and flow of a successful Baffin CSILE/Knowledge Forum classroom might actually look and sound like, perhaps providing a belated answer to Gzowski's Morningside question of so many years before. Although the "typical day" never really happened within a single twenty-four hours, it is constructed from actual classroom observations and database contributions. In essence it is a written version of the "looks like/sounds like" exercise often used in workshops to help bring out the deeper principles and processes manifested in observable behaviours: in the description that follows I have indicated specific connections between the described classroom practices, knowledge building principles (KB), and the intervention for collaborative empowerment (ICE) in square brackets. I can't help but think that the first and only teacher to withdraw from the project because he didn't feel he was seeing the kind of cognitive engagement and growth that he would have liked from his students' involvement with CSILE/Knowledge Forum might have benefited from the "looks-like/sounds-like" characteristic of this passage.

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[3] Liz and I drafted the original version of this section of Chapter 4 in 1997 as part of a proposed book on educational technology to be published by Apple Computer. The book was never published and this version has been updated to include both the changes in practices that occurred after 1997 and initial connections with the knowledge building principles. I still think it's an excellent overview of both the possibilities and the practicalities of organizing and running a CSILE/Knowledge Forum classroom.

The second part of the chapter looks at examples from three of Liz's databases to highlight development of those knowledge building principles and their intersection with the intervention for collaborative empowerment. From Atausiq school's 1994-95 database, the first highlights examples of epistemic agency, democratization of knowledge, and community knowledge, collective responsibility. From the 1996-97 Marruuk database that introduces the thesis, the second example focuses on knowledge building potentialities that were not realized in the suicide episode, but were actualized to some degree later the same year. Finally, examples drawn from the 1999-2000 Pingasut database illustrate an emergent knowledge building community.

A Day in the Life of A CSILE/Knowledge Forum Classroom

As Liz raises her hand and calls out, "Give me five!" to get her class's attention, she can't help but be reminded of the challenges she and her students confront in Iqaluit, a town of about 5,000 on Baffin Island in Canada's eastern Arctic. The 23 Inuit students that make up her Grade 6 class speak Inuktitut as their first language and though most of them are conversationally fluent in English, very few have the academic proficiency to match. In fact, because of the breakneck pace of social and cultural change in Iqaluit, a substantial portion has only the most basic literacy skills in either Inuktitut or English. Given the immensity of the struggle facing them in school and the often difficult conditions facing them in the larger community, they risk dropping out, becoming teenage parents, succumbing to the lure of drugs and alcohol, or committing suicide, the rates in the eastern arctic for all of these being among the highest in Canada.

Once she has the students' attention, Liz reviews their progress on the current theme of study, Indigenous Peoples. Taken from the *Piniaqtavut* program of studies developed by a

committee of Inuit and non-Inuit educators, the Indigenous Peoples theme integrates subject areas around a topic of local relevance in a manner more reflective of an Inuit worldview. As Liz finishes talking, the students move off individually or in small groups to engage in one of three tasks. One group gathers around a map on the wall to determine where the groups of indigenous people they have chosen [KB: epistemic agency] to study actually live. A second group picks up resources from a small classroom library and continues their research on their particular peoples [KB: constructive use of authoritative sources]. The final group moves to a network of five Macintosh computers scattered around the perimeter of the classroom where they log into CSILE/Knowledge Forum, the interactive database in which they record, share, and collaborate on their investigations and which provides them with software tools to facilitate this process.

As the students settle into their work, Liz moves among them, helping them focus on their tasks and answering questions. In contrast to many classrooms, although she may be the final arbiter in cases of dispute, Liz is not the only source of answers, nor is she the focus of attention. In fact, as she provides an explanation of how to do something with CSILE/Knowledge Forum to a student on one computer, a student on the neighbouring computer leans over and says, "See! Told you!" At least some of the answers exist independently of the teacher in this class [KB: epistemic agency].

A couple of other things might strike a "fly-on-the-wall" observer of this classroom scene, particularly if they are more used to classrooms in which the teacher talks and students listen and take notes or do seatwork. The first is a buzz of student talk and movement around the classroom. Superficially this may seem both distracting and aimless, but a closer examination reveals that for the most part it is directly related to investigation of the Indigenous People theme. The second is Liz's apparent comfort with this environment and her almost uncanny

ability to focus effectively and unobtrusively on students who are off topic or in need of assistance. Despite her own predisposition towards classrooms based on small group work and her years of experience as a northern educator, Liz is quick to note that neither condition has come without struggle.

For one thing, if we can accept as accurate what the students related when they entered her class in September, their conception of learning in school centred around "fill in the blanks" type work. They had little if any conception of language as a tool they could use to advance their own learning. Their use of computers had been similarly skewed towards the trivial: the previous year had restricted them to weekly or biweekly sessions in the school computer lab with at least some of that limited time spent on games and none of it leaving any lasting impression of relevance to anything the students considered important. As a result, Liz spent the first two months of the school year acquainting the students with a classroom routine intended to familiarize them with working in small groups on mini-rotations to various learning activities. One of those mini-rotations was a daily thirty-minute spot at a computer where they used the Mavis Beacon Teaches Typing software package to learn keyboarding, and KidWorks and ClarisWorks to learn the fundamentals of graphics and word processing. By the time of their first exposure to CSILE/Knowledge Forum in November, the students were comfortable in a classroom in with multiple simultaneous activities were and in which they could begin to take more responsibility for working without constant teacher supervision [KB: epistemic agency]. They were also comfortable enough with some of the more subtle features of the computer that they were ready to use it as a tool for learning rather than entertainment. Liz noted the latter in the students' first couple of days on CSILE/Knowledge Forum. Whereas in previous years she had had to put assignments and checklists on sheets attached to each computer, this year the

students' mastery of multiple windows enabled them to flip back and forth between the introductory note in the database with which the unit began, contributions from their classmates, and their own contributions.

CSILE/Knowledge Forum's shift from the emphasis on the individual acquisition of knowledge that characterizes many classrooms to an emphasis on individuals' contributions to furthering the communal understanding of a problem or topic has required that Liz revise how she tracks and assesses student progress. Although each theme or topic of study will result in a piece of student work which will be submitted for formal evaluation, because students often have the choice [KB: epistemic agency] about whether to work individually or in small groups that progress at different rates, keeping track of their progress individually and as a group towards their final goal is a challenge. To assist in this process Liz keeps a portfolio for each student. The portfolio includes a checklist that summarizes what they have completed, what they are currently working on, and what they will be doing next. If ever a student seems at a loss about how to proceed, Liz can refer to their portfolio to help them get back on track [KB: embedded and transformative assessment. ICE: advocacy-based assessment].

While the student checklists and portfolios are modifications of pen-and-paper assessment techniques that are used in many regular classrooms, CSILE/Knowledge Forum provides Liz with an analytical toolkit (ATK) to help her monitor the progress of students in an expanding database. On a student-by-student basis the ATK enables Liz to determine such things as the number of notes contributed, their length, and the number of revisions. Should she desire, she can also explore the kinds of relationships between students' notes—build-ons and references, for example, which are indications of knowledge-building processes [KB: knowledge building discourse]. These kinds of analyses help her identify points in the growing discussion

that may benefit from her direct intervention. She has also found that printed summaries of students' contributions can be useful to motivate continuing involvement [KB: embedded and transformative assessment. ICE; advocacy-based assessment].

When students first began contributing to the database Liz read almost everything and commented on a lot of it to reinforce the idea that she was an active and caring member of the group and to model a variety of appropriate interactions [KB: democratization of knowledge; community knowledge, collective responsibility; knowledge building discourse]. As the database grew and students contributed more and longer notes this became too time-consuming. Use of the ATK streamlines her participation by helping her to identify areas of activity that might benefit from her direct involvement, something she believes is important. Here her experience deviates to some extent from that of some of her colleagues at other CSILE/Knowledge Forum sites and points out a challenge central to her role as a CSILE/Knowledge Forum teacher: to what extent should she participate in a student database? How can she structure her participation as the "first among equals" in a knowledge building community as opposed to the authority who dominates? Some of her colleagues feel they can address this dilemma by maintaining a minimal presence in the database. In contrast, Liz feels that her students' lack of experience with English as a tool for learning in a literate environment requires that she participate directly in order to provide them with a model of how they might begin to do so as well [KB: democratization of knowledge; constructive use of authoritative sources].

This is something emphasized that evening when Liz logs into CSILE/Knowledge Forum to monitor student progress from home over the Internet. Although she regularly uses CSILE/Knowledge Forum's search function to browse the database by author, topic or contributions since a certain date, tonight she uses the ATK to generate a quick overview of

student activity on the Indigenous Peoples topic. She focuses on the latest contributions of each student, adding comments or questions where she feels it is appropriate. She notes with satisfaction the students' growing competence in titling their notes accurately to facilitate retrieval, but also notes that their use of scaffolds to identify their notes' roles in the progress of the ongoing investigation is erratic [KB: knowledge building discourse]. It isn't something she's particularly concerned about at this point as it's still only part way through her students' first year with the program, but she will keep it in mind as something to broach to them soon. Often she introduces a new CSILE/Knowledge Forum feature such as Scaffolds by doing a mini-lesson with for or five students who seem ready and letting them teach their peers [KB: democratizing knowledge; constructive use of authoritative sources; community knowledge, collective responsibility]. Tonight, though, she notices that students are beginning to read database contributions from students in different groups who are researching different indigenous peoples. They are also beginning to pull in sources of information other than those available in the classroom. One student, for example, offers a story his mother told him about meeting Mohawk Indians to a student researching the Mohawks. Another adds information from a television documentary about the Cherokee. Still another draws upon direct contact with Maori contacted over the Internet to help with her research [KB: epistemic agency; democratization of knowledge; community knowledge, collective responsibility; pervasive knowledge building].

Even more exciting, however, is the evidence of higher order thinking implicit in the students' growing tendency to make direct comparisons between different contributions or to rise above the current level of discussion. One student, for example, notes the similarity in shape among the bushmen's hut, a wigwam, and an igloo. Another explores the relationship between the Cree and Inuktitut syllabic orthographies. A third student initiates a discussion proposing that

interested students contribute specific comparisons between aspects of life of the various indigenous peoples being studied. Liz realizes that the class is making steps towards becoming a real knowledge building community [KB: rise above; symmetric knowledge advance; idea diversity; epistemic agency; knowledge building discourse].

Although she doesn't always do so, Liz takes the time this evening to identify and retrieve recent contributions to topics other than the Indigenous Peoples that is the current focus of classroom study. A quick survey of the database draws her attention to a unit on customs around the world to which a couple of interested students are still contributing although the unit has been officially finished for over two months. Because the CSILE/Knowledge Forum database allows units of study to remain accessible for virtually any length of time, it provides for student engagement and enrichment as long as their interest holds out [KB: epistemic agency]. Liz remembers a "throwaway" CSILE/Knowledge Forum discussion that she put together to give students something to do in the database for a week or two between units that evolved into a six-month exploration of racism. The communal database allows students to make connections between themes that would otherwise be relegated to separate sections of a notebook or forgotten [KB: epistemic agency; knowledge building discourse; pervasive knowledge building].

Perhaps more importantly however, it provides all Liz's ESL students with more extensive exposure to the language relevant to the topics of study and, because they have contributed it themselves, more appropriate to their current level of competence. From her ten years in northern education and her reading on what is known about bilingual education, Liz knows that comprehensible input is essential to acquisition of a second language. She also knows that academic proficiency in a second language generally lags behind conversational proficiency

by as much as five to seven years. As an experienced ESL teacher, she strives to create an environment that supports extensive and appropriate language use in the study topics of study relevant to students [ICE: additive cultural/linguistic incorporation]. By providing an environment that helps students build connections between context-embedded, cognitively undemanding conversational use of language and the context-free, cognitively demanding academic use of language, CSILE/Knowledge Forum has facilitated that process to such an extent that sometimes she thinks she could no longer teach without it.

Relying on students for input to the database ensures that the language is accessible to most of their peers and allows for such things as interviews with elders to supplement scanty resources on some themes [KB: constructive uses of authoritative sources. ICE: collaborative community participation], but Liz sometimes worries that it doesn't provide them with sufficiently challenging models to aspire to and emulate. To some extent that challenge had been addressed in her previous school where a network of CSILE/Knowledge Forum classrooms had been set up to share a common database. In conjunction with common units of study undertaken across classes at a given grade level, this arrangement allowed interactions between English first-language and second-language students in which the contributions of English first-language students served as models of language use for the second-language students. Cross-grade interactions in the database also allowed the contributions of older and more proficient English second-language students to serve as models for their younger peers [KB: democratization of knowledge, knowledge building discourse; community knowledge, collective responsibility; pervasive knowledge building].

The only teacher using CSILE/Knowledge Forum in her present school, Liz initially found she could no longer rely on this type of cross-grade, cross-class collaboration to ensure

that the language of the database was both appropriate and challenging to her students. Instead, she deliberately structured alternative approaches to foster these types of interactions. At one point she used students from her class at her previous school to act as "learning buddies" or peer mentors to help her current students become familiar with both the use of the CSILE/Knowledge Forum software and how to undertake collaborative research. Now that her current students are comfortable with CSILE/Knowledge Forum, she has set them up with partners in the classes that are just beginning to use it [KB: democratization of knowledge; constructive use of authoritative sources; community knowledge, collective responsibility; pervasive knowledge building]. This has had two additional advantages. First, because Liz's students speak Inuktitut as well as English, they are able to work with the Inuktitut-speaking students in the younger grades and notes written in Inuktitut's syllabic orthography are now starting to appear in the database [KB: constructive use of authoritative sources; democratization of knowledge; community knowledge, collective responsibility; pervasive knowledge building; real ideas authentic problems. ICE: additive cultural linguistic incorporation; collaborative community participation]. Second, because the students are often more comfortable with the CSILE/Knowledge Forum software than the teachers of their buddy classes, they sometimes find themselves mentoring the teachers as well [KB: constructive use of authoritative sources; democratization of knowledge; community knowledge, collective responsibility; real ideas authentic problems; pervasive knowledge building].

To provide further exposure to the more advanced language use appropriate to an area of study Liz encourages the participation of external resource people in the CSILE/Knowledge Forum database. Guest contributors have included the school principal, parents, and other occasional classroom visitors. Visiting scientists and representatives of the Nunavut Research

Institute have volunteered their time and expertise to contribute to various units of study. A quick search of the database reveals comments made by parents attending parent-teacher interviews that urge their children to continue their efforts in school. A contribution from the Deputy Minister of Education poses a question for the Indigenous Peoples topic. Classroom visitor Peter Gzowski, the Pulitzer award winning journalist known for his work in promoting literacy, has posted a note expressing his wish to be remembered as "a really cool guy who types fast" (P. Gzowski, CSILE database, Note #869, April 25, 1997). Gzowski's note has elicited a comment from a student to correct his spelling [KB: constructive use of authoritative sources; democratization of knowledge; idea diversity; knowledge building discourse; community knowledge collective responsibility; pervasive knowledge building].

Only a couple of years ago resource people had to be physically present in the classroom in order to contribute to the database. Now, however, the Internet connection Liz uses to access CSILE/Knowledge Forum from home has opened up a wealth of new opportunities. She is particularly pleased that it has allowed her to continue her ongoing collaboration with the colleague primarily responsible for the original implementation of CSILE/Knowledge Forum in the Baffin region. After seventeen years in the arctic, he moved to Prince Edward Island, over 2,000 kilometres away, and so is unable to provide the direct support that he has in years past. Instead, he now logs into the CSILE/Knowledge Forum database over the Internet just as Liz does from home.

This telementoring relationship has been under way for several years now. It evolved out of necessity, beginning when Liz took over sole responsibility for the CSILE/Knowledge Forum local-area network for the first time.[4] With no local support person, she relied upon Sandy to

[4] As described in the Introduction.

answer her questions about keeping the computers and network operating reliably. Beginning with email, their medium of collaboration shifted to the CSILE/Knowledge Forum database as the number of Liz's technical questions diminished [KB: rise above] and Sandy found himself drawn as an educator to consider issues pertaining to subject matter and pedagogy [KB: constructive use of authoritative sources; democratization of knowledge; pervasive knowledge building]. The CSILE/Knowledge Forum view, the "Classroom Research Journal," created by Liz to record her reflections about implementing CSILE/Knowledge Forum gradually became the nexus for their collaboration. Liz's classroom observations and questions often led Sandy to offer his own perspective on what was taking place in the database [KB: idea diversity; community knowledge, collective responsibility; pervasive knowledge building]. At other times Liz would propose ways to introduce a new theme of study or to structure a special class to incorporate a guest visitor for Sandy's feedback. Although invisible to the students, the Classroom Research Journal was an integral part of the same database in which they were working, so it was a simple matter to move between educators' discussion and the relevant student work [KB: pervasive knowledge building; knowledge building discourse]. It also permitted Sandy to work directly with the students if the circumstances allowed. For example, when students were using CSILE/Knowledge Forum to work on their Science Fair investigations Sandy contributed suggestions to one student about how to build a pinhole camera and to another about how to construct a papermaking frame, information for neither of which was available locally [KB: real ideas, authentic problems; idea diversity; community knowledge, collective responsibility; pervasive knowledge building; constructive use of authoritative sources].

Telementoring, wide-area access to CSILE/Knowledge Forum databases, and use of the database to promote knowledge-building for educators as well as for students has evolved

significantly since Liz's and Sandy's first efforts. Last year, for example, both Sandy and Liz collaborated with teachers implementing CSILE/Knowledge Forum in Hay River, a community in the Northwest Territories over 2,000 kilometres to the west. Over the course of the year participants at both sites contributed to the development of a shared database on Space to see whether the kinds of relationships that had existed within a building could be established between Iqaluit ESL students and English-first-language students over 2,000 kilometres away. The teacher in Hay River extended the telementoring concept to include an astrophysicist who just happened to be resident in Hay River and was willing to share her expertise by participating in the database [KB: community knowledge, collective responsibility; democratizing knowledge; pervasive knowledge building; constructive use of authoritative sources. ICE: collaborative community participation]. For their part, the Iqaluit students were able to contribute from their online experiences with programs from the Canadian Space Agency [KB: constructive use of authoritative sources] and Inuit myths and legends about the stars they had collected from local elders [KB: democratizing knowledge; idea diversity; epistemic agency; community knowledge, collective responsibility; symmetric knowledge advancement. ICE: additive cultural/linguistic incorporation; collaborative community participation].

Liz has continued to draw on Sandy's support as she uses the Iqaluit database to build a collaborative approach to extend the use of CSILE/Knowledge Forum to other classrooms within the school [KB: real ideas, authentic problems; improvable ideas; idea diversity; epistemic agency; pervasive knowledge building; democratizing knowledge; symmetric knowledge advancement; community knowledge, collective responsibility, constructive use of authoritative sources]. The Classroom Research Journal has multiplied to include views on collaborative theme development, technical questions, assessment, and observations. Although these views are

intended for teachers, they are accessible to students and the odd student will comment on or ask a question about the issues raised there [KB: epistemic agency; symmetric knowledge advancement; pervasive knowledge building].

Tonight, however, as Liz finishes reading and commenting on the students' notes she restricts herself to one last contribution to direct Sandy's attention to the notes which she thinks demonstrate higher order thinking and logs out. The next morning, thousands of kilometres and a time zone away, Sandy logs in to check the database, something he does a couple of times a week. Searching for notes contributed since his last login, he finds Liz's contribution, opens it, then searches by author to retrieve the notes she has pointed out. He notes with delight the evidence of the students' growing ownership of the investigation [KB: epistemic agency], offers a couple of comments, and poses a question to a student about the extinction of Newfoundland's Beothuk people [KB: idea diversity; democratizing knowledge, community knowledge, collective responsibility]. Then he logs out himself.

Rising Above a Day in the Life of a Baffin CSILE/Knowledge Forum Classroom

As Table 4.2 demonstrates, the connections between the characteristics of the interactive/experiential pedagogy advocated by *Piniaqtavut* and the "typical" day in a Baffin CSILE/Knowledge Forum classroom are fairly obvious.

Table 4.2 Illustrations of the interactive experiential approach from a CSILE/Knowledge Forum classroom.

Interactive/ Experiential Approach	A day in the life of a Baffin CSILE/Knowledge Forum classroom
Genuine oral and written student-teacher dialogue	Meaningful student-teacher dialogue is sustained in writing in CSILE/Knowledge Forum and reinforced orally in classroom discussions. The database provides a common reference point for discussion and ecause its contents are open to all members of the classroom community, all students have access to all aspects of the dialogue, even those in which they are not directly involved.
Teacher	The teacher selects the Indigenous Peoples topic for investigation from *Piniaqtavut*

facilitation versus control	and structures how the investigation takes place, but students have a certain amount of control over what they investigate and how. Student knowledge and experiences are as important as the teacher's in this process.
Collaborative student-student talk	Collaborative student-student talk is encouraged through small-group work. Often students are paired at computers for peer-teaching, to discuss contributions to the database, or to take advantage of a particular skill set such as one person typing while another dictates.
Meaningful language use versus surface correctness	The primary use of language is to further the progress of a collaborative investigation. Surface correctness is subordinate to comprehensibility and an appropriate purpose at this point.
Conscious integration of language	CSILE/Knowledge Forum contributions become student-generated examples for focused language lessons when errors interfere with comprehensibility and when the results of an investigation are being prepared for publication or sharing beyond the database.
Focus on higher level cognitive skills	Students read critically and respond appropriately with questions and comments. They constantly assess each other's contributions to make comparisons and draw conclusions.
Task presentation for intrinsic motivation	Tasks are often presented in the form of a problem to be solved and students' interests, knowledge, and experiences are critical to solving that problem. Investigations are never over in the sense that they remain in the database for future reference or work and can be extended or revisited as interest or additional learning warrants.

Less obvious, however, is the relationship between the intervention for collaborative empowerment of which the interactive/experiential pedagogies are the surface features and knowledge building principles that may underlie or emerge from the implementation of CSILE/Knowledge Forum. Table 4.3 uses the three-part community-agency-ideas grid proposed in the previous chapter to illustrate that relationship.

Table 4.3 The relationship between the intervention for collaborative empowerment and knowledge building principles as illustrated in a day in the life of a Baffin CSILE/Knowledge Forum Classroom

	Intervention for collaborative empowerment	**Knowledge building principles**
Community	• **Additive cultural/linguistic orientation.** Database allows students to work at their comfort level linguistically, but provides models to emulate and rise to.	• **Pervasive knowledge building.** The process of creating understanding of Indigenous Peoples flows between CSILE/Knowledge Forum and other classroom activities, and integrates experiences, resources and expertise initially unrelated to the investigation. • **Democratizing knowledge.** All members of the community have something to contribute, both in terms of the executive processes of creating understanding

	Long-distance collaboration integrates different cultural interpretations of constellations. • **Community participation.** Draws on resources from classroom, school and wider community, including telementors and a remote class.	(learning to use CSILE/Knowledge Forum, for example) and contribution of specific content knowledge. • **Symmetric knowledge advancement.** As the students work towards a deeper understanding of Indigenous Peoples, the teacher works towards a deeper understanding of a classroom that supports their learning. • **Community knowledge, collective responsibility.** All members of the community have a responsibility to aid the community in its understanding of Indigenous peoples and in supporting the processes through which that understanding will be created.
Agency	• **Advocative assessment.** Portfolio process scaffolds student progress at individual levels. ATK enables teacher to identify and show to students areas that need attention.	• **Embedded, concurrent, and transformative assessment.** Assessment is embedded in the day-to-day operation of the classroom and addresses both the processes of learning and the content. • **Constructive use of authoritative sources.** Encouraged by a variety of resources including maps, books, resource people, and the Internet. • **Knowledge building discourse.** Students use scaffolds and build-ons to help structure contributions that shape the growth of the investigation. • **Epistemic agency.** Students make choices about how their investigations proceed within the parameters of the topic set out in *Piniaqtavut*. They initiate questions about their topics and CSILE/Knowledge Forum that their peers can follow up with them. Agency develops further as they begin to read each other's work, make connections, and bring in independently located knowledge. The persistence of the database allows students to return to a topic at any time.
Ideas	• **Social justice.** Embodied in the equity of classroom participation. Topics such as Racism address it specifically. • **Power structures.** Not explicitly addressed; implicitly addressed in the extent to which students develop epistemic agency. • **Knowledge construction** is the focus of CSILE/Knowledge Forum us.	• **Real ideas, authentic problems.** The reality of the classroom investigation becomes evident as it begins to draw in experiences and knowledge from the students' personal lives. The technical affordances of CSILE/Knowledge Forum contribute real problems to be solved by teacher and students. • **Improvable ideas.** The implementation of CSILE/Knowledge Forum and its refinement over a number of years is an improvable idea. Students' comments and suggestions for each other's notes indicate that the notes are improvable artifacts. • **Idea diversity.** The presence of multiple voices and perspectives from in- and outside the classroom in CSILE/Knowledge Forum ensures idea diversity. • **Rise above.** Students begin to rise above factual information as they make connections between Aboriginal orthographies or shelter design. The teacher rises above her current understanding of knowledge building and CSILE/Knowledge Forum each time she solves a problem, introduces a new innovation, or takes

		advantage of a new feature.

Table 4.2 illustrates how well CSILE/Knowledge Forum and the interactive/experiential pedagogies reinforce each other, at least at the surface level. It's important to note that many of the classroom practices described are snapshots of potential for knowledge building, not its apotheosis. While allowing students choices in what indigenous group to investigate is a step towards epistemic agency, for example, it is a long way from the students themselves identifying the choices, determining which ones to pursue, and planning how to go ahead with that. As long as the first step is not confused with the destination, it is less important that the indications of knowledge building are tenuous or tentative, than that they are improvable over time. The final three sections of this chapter look at specific aspects of the process of improvement.

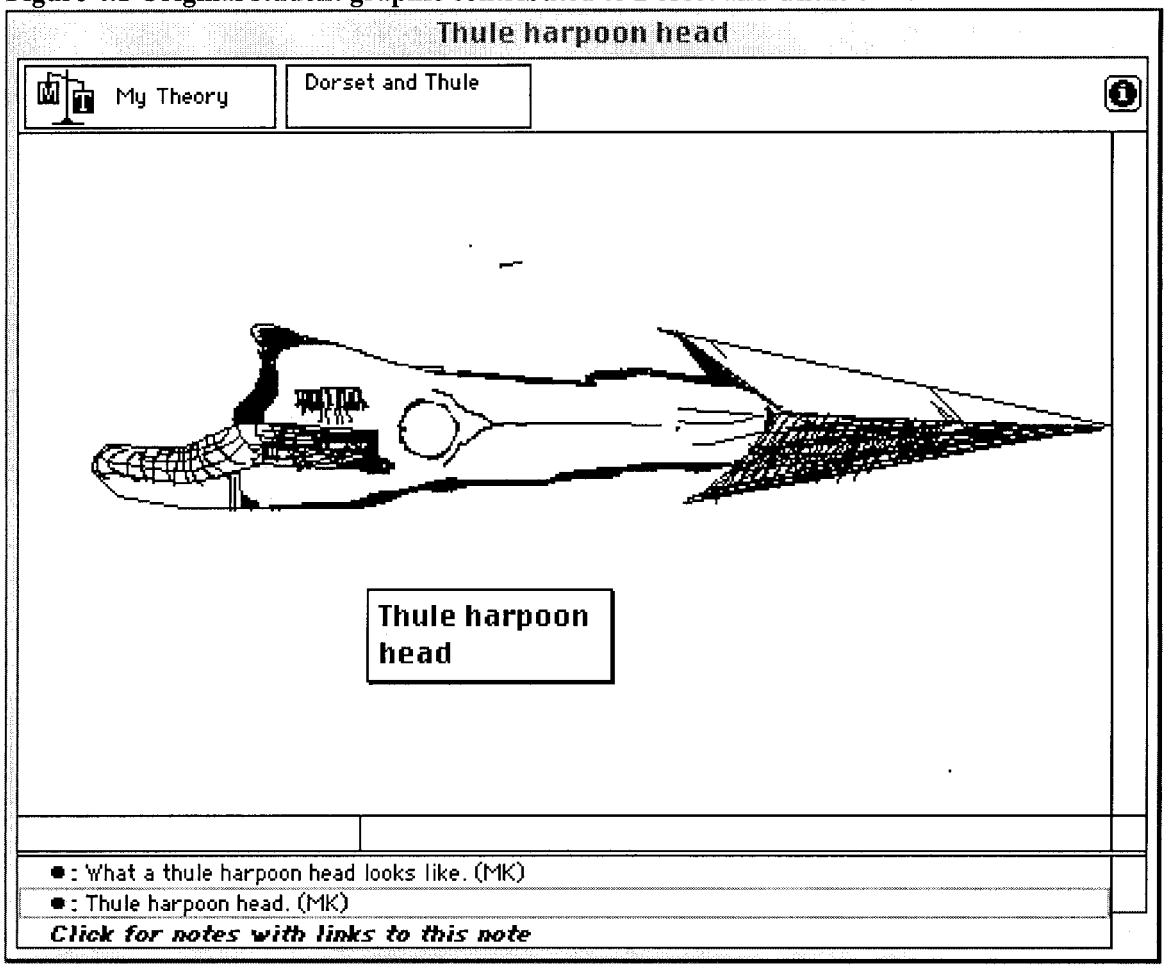
The 1994-95 Atausiq Database: Dorset and Thule

In many respects 1994-95 was the make or break year for CSILE/Knowledge Forum at Atausiq School. The previous two years had seen its initial introduction to three classrooms and its expansion to include the entire Grade 8 and 9 and one Grade 10 class. The technical difficulties with the network that had seriously impaired database access the year before had been resolved. Most teachers and Grade 9 students were familiar with CSILE/Knowledge Forum as were about twenty Grade 8 students who had participated in a special enrichment program the year before. Recognizing that working with CSILE/Knowledge Forum would require extra time by teachers to work in the database, the BDBE had authorized an extra weekly preparation period for each CSILE/Knowledge Forum teacher. The teachers had agreed as a group to supplement this with a biweekly after school meeting in which they could share progress and

solve problems. If CSILE/Knowledge Forum couldn't be made to work in this context, it probably couldn't be made to work anywhere.

There were difficulties, the most notable being the withdrawal from the project of one of the original two CSILE/Knowledge Forum teachers, another being a shift in administrative priorities at the school that broke the "school-within-a-school" philosophy that had shaped the junior secondary program for the previous two years and re-established a rotary system at Grade 9. Moreoever, as is to be expected with a diverse group of teachers and students, there was variability in terms of how it was applied. Nevertheless, by my estimation and according to both informal feedback from teachers and an anonymous year-end assessment it was very successful year. The database is immensely rich and any number of examples could be used to illustrate the integration of the intervention for collaborative empowerment as embodied in *Piniaqtavut* and emerging aspects of knowledge building. However, because of its initial challenge, unexpected twists, and ultimate success, I will focus on Liz's Grade 8 unit on the Dorset and Thule (indigenous precursors to the Inuit). Involving eighteen Inuit, primarily ESL students of mixed ability, it was taught over four months and gives clear indication of the potential of CSILE/Knowledge Forum in an ESL, cross-cultural environment. What follows draws on the journal Liz kept as part of the process to support our biweekly meetings, contributions to the database and my own reflections.

Figure 4.1 Original student graphic contributed to Dorset and Thule unit.



The first authentic problem to be solved with respect to this unit was the teacher's: how could a topic like Dorset and Thule be made accessible to Grade 8 second-language students? As her initial journal entry shows this was at least partially a matter of bringing some kind of contextual relevance to a topic that could otherwise become abstract and academic.

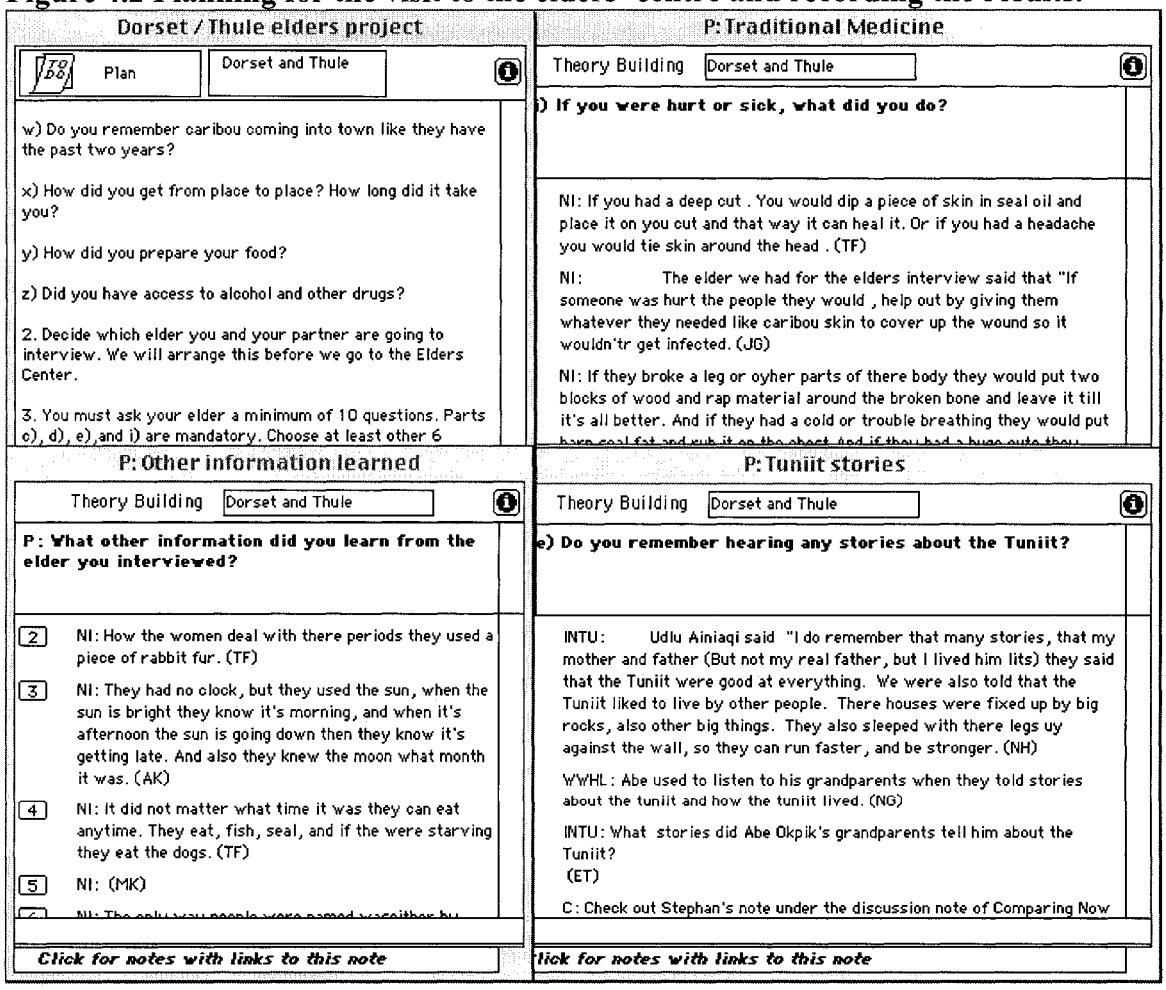
> Found this a difficult unit in terms of relating CSILE with it. Didn't seem to be an obvious project or discussion that we could use along with the in-class work as there are very few written resources on this theme. What there is, has been written at a college level, so was difficult for my English as a second language class.

Illustrating both the collaborative community participation and additive cultural/linguistic incorporation of the intervention for collaborative empowerment, the decision to consult elders

also illustrates the knowledge building principles constructive use of authoritative sources and democratization of knowledge:

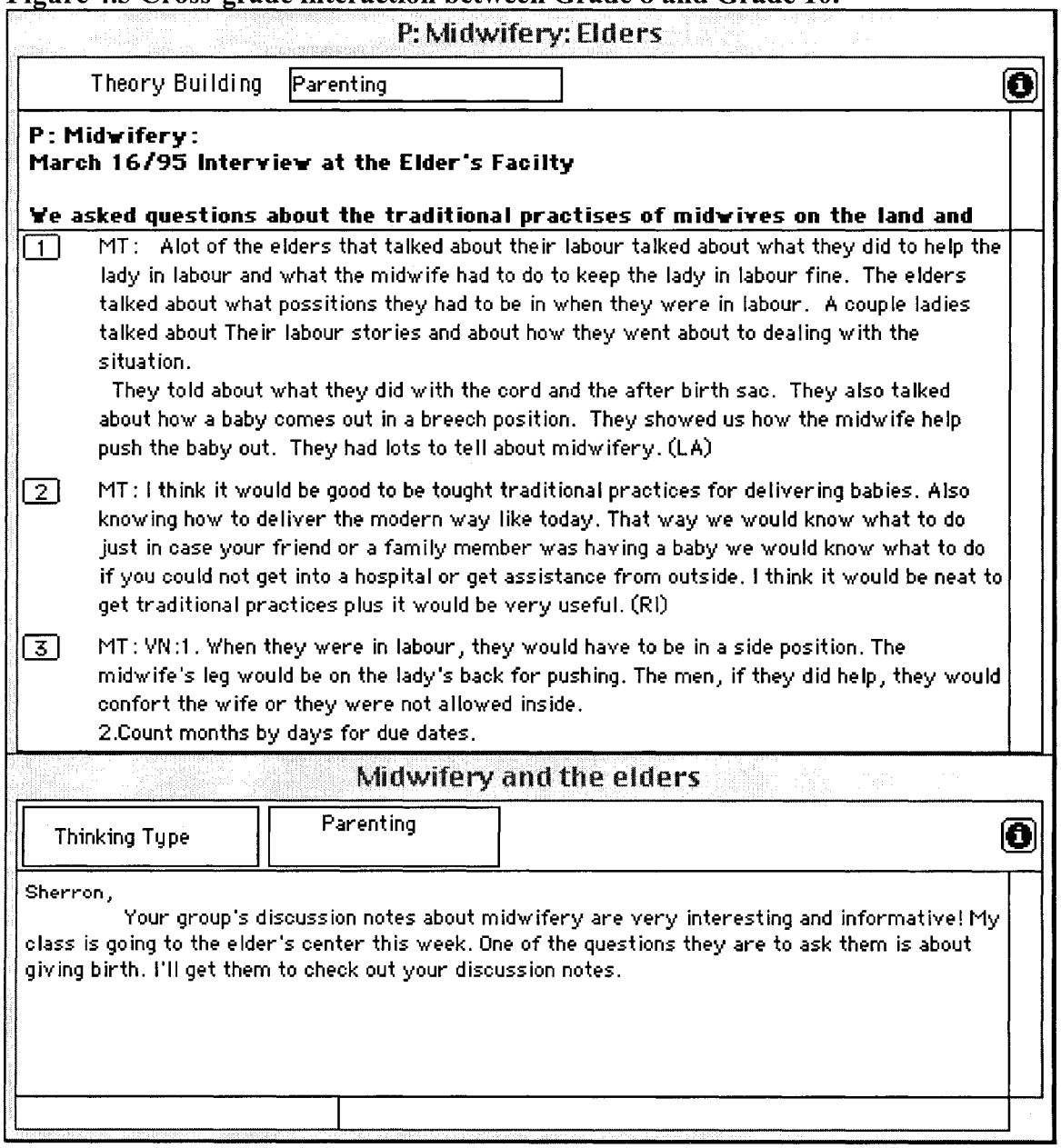
> With the limited resources, the class felt the best source of information was the elders, due to the oral traditions of the Inuit. As a class we brainstormed questions we could ask the elders when we visited them. Then the students divided up the questions to get them translated as most of the elders are unilingual. Learned that this was an extremely difficult task for most of the class. Then the class decided that they'd like to take some goodies to the elders when they visited. So we have been baking and freezing treats to take with us. The class suggested that we actually go get our own caribou to make the caribou stew out of. We planned that and extended our time on this project. Due to a change in plans at the office, this did not go ahead as planned. (The students are really disappointed.) Anyway, we are going to visit the Elders Centre on the 20th. The students will record their notes on CSILE.(The advantage of CSILE is that it is like the Energizer bunny - it keeps going and going long after the them[e] "officially" ends!)

Figure 4.2 Planning for the visit to the elders' centre and recording the results.



Students' input into the planning process is an example of epistemic agency, but also of a focus on authentic problems of their own related both to the logistics of the visit and the content of the interviews. A second example of constructive use of authoritative sources and democratizing knowledge, but also of community knowledge, collective responsibility, a symmetric knowledge advance and pervasive knowledge building can be seen in the proposed use of the Grade 10 class's prior work along the same lines (Figure 4.3).

Figure 4.3 Cross-grade interaction between Grade 8 and Grade 10.



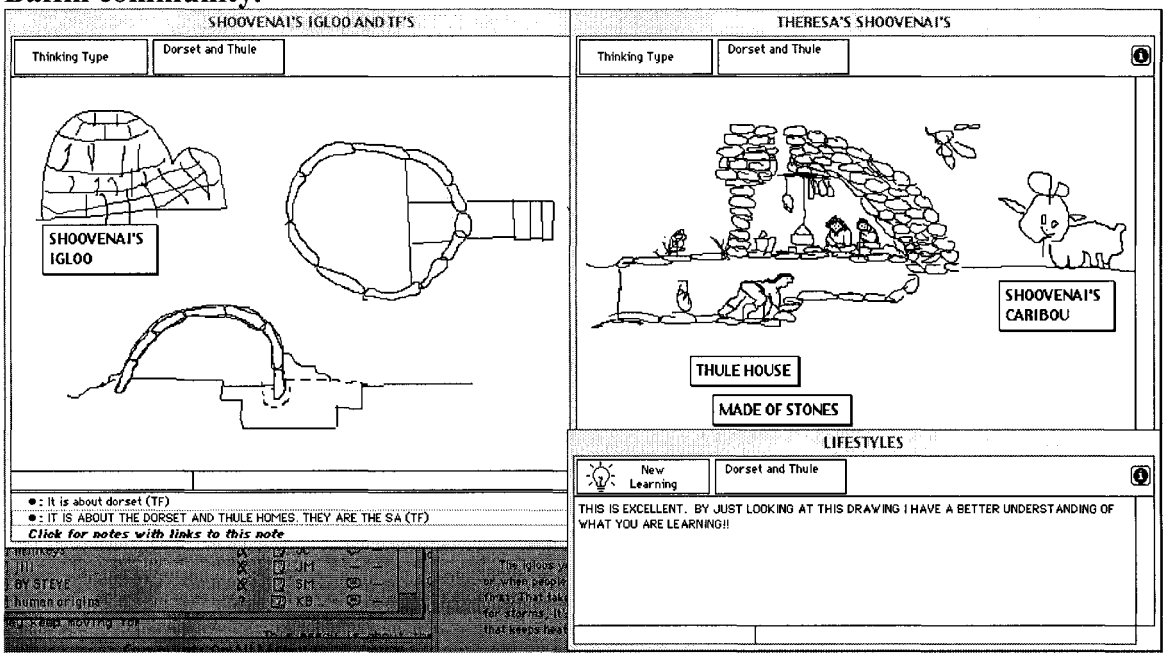
As it appeared the unit was about to end, an example of the democratization of knowledge, idea diversity, improvable ideas, pervasive knowledge building, and rise above recalls Liz's comparison of CSILE/Knowledge Forum to the "Energizer bunny" by launching the class on an entirely new spiral of investigation:

> As the unit drew to a close, and we started reviewing for a test, Sandy McAuley posted a discussion note on CSILE about the differences between the two groups. Upon reflection, in spite of the information we had dealt with in the unit, I still wasn't totally clear about the differences. If I wasn't clear, I felt safe in saying that my students weren't clear either! So I took the question back to the class. We then ma[d]e a comparison chart covering the main areas we had looked at in the unit. The class broke up into groups and went back through all the information to review what we had read on specific areas (i.e. one group chose shelters so they went back through all the articles etc. and recorded in point form the information under the two headings of Dorset and Thule). Then each group presented their information to the class, while the rest recorded the information on their individual sheets. Each person then had to record one section on CSILE.

Also clear in this example is the teacher's willingness to acknowledge that she is a learner in this process too. The renewed cycle of investigation led to another example of the democratization of knowledge, community knowledge, collective responsibility and a symmetric knowledge advance through integration of the contribution of a special needs student (Figure 4.4):

> A couple of the students asked if they could use a graphic to explain better. (Why, of course!) The diagram of the differences between houses that they drew is far superior to the rectangle and side view of steps that I had shown them!
>
> What was really neat was to watch Theresa assist Shoovenai (my special needs student [who needed a full-time special needs assistant to function in a regular classroom]) in the illustration of the homes. Shoovenai drew the caribou and igloo all by herself, with Theresa just giving her verbal guidance! The Special Needs Assistant and I were elsewhere in the room!
>
> All illustrations were drawn freehand [using a mouse] – the artistic ability of these students is amazing!

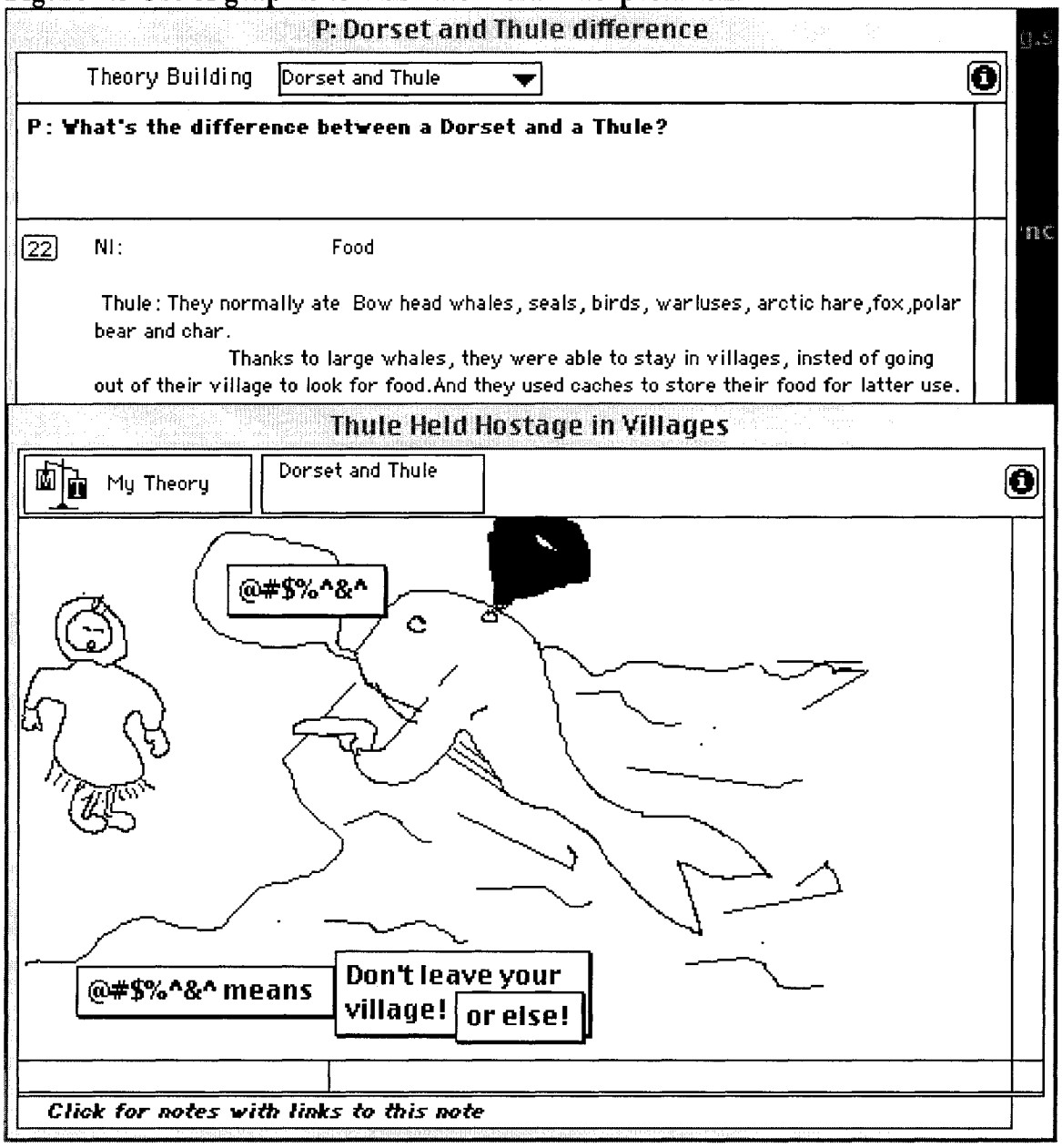
Figure 4.4 Collaborative note by mainstreamed special needs student and a peer. "Lifestyles" note at the bottom right was contributed by a teacher visiting from another Baffin community.



In an explicit focus on language, Liz was able to make use of her inexpertise with graphics tools to help a student understand the importance of ensuring that language actually means what is intended:

> Tried something different with this discussion note. Sappa had said that "the whales kept the Thule in the villages." [Note 22 at the top of Figure 4.5. The student's note was revised 4 times to more accurately reflect what he wanted to say.] The mental imagery of this was too good to be passed up, hence my first graphic! That crude graphic was enjoyed by so many of the students, and taught them more effectively about the importance of explaining statements more fully than if I had just asked in words for Sappa to explain what he meant! (It also demonstrated that we all have different strengths, but it is okay to try.)

Figure 4.5 Use of graphic to illustrate literal interpretation.



In an example of advocacy-based (intervention for collaborative empowerment) and embedded and transformative (knowledge building) assessment, the "test" for which the students had been reviewing found itself transformed into an essay-writing process, something new for these students:

> From this, we did an outline in class for an essay comparing the two groups. They then had to fill in the details and study their outline. On the designated day, the students were given a blank sheet of paper and told to write, unassisted, an essay comparing the Dorset

and Thule. Just the concept of an essay to second language learners is frightening! The results were surprisingly good! Ming's showed the greatest depth so he shared this with the class through CSILE.

The essay referred to is reproduced below:

DIFFERENCES BETWEEN THE DORSET AND THULE

This essay is about the Dorset and Thule and their differences. The Dorset and Thule have a lot of differences between them and at first, I couldn't tell which was which. I learned how to tell them apart. The two have some things in common but they both lived at different times.

The Dorset lived before the Thule did. The Dorset date back to before Christ. They lived from at least 500 BC to approximately 1000 AD. The Dorset died off around 1000 AD and the Thule generation started around that time. The Thule lived about 300 to 900 years ago, from 1000 Ad to about 1700 AD.

The Dorset were nomadic people. They had to travel to hunt their food. The Dorset usually ate seal, walruses, beluga, muskox, caribou, bears, birds and char. The Thule were not so nomadic because they hunted the bowhead whale. With all that meat they could stay in one spot for a long time. They usually ate bowhead, caribou, polar bear, char, walruses, Arctic fox/hare, seal and beluga.

The Dorset were good hunters but their weapons were not as advanced as the Thule's. The Dorset were highly skilled hunters but nothing on their weapons was detachable. Their weapons were lances, harpoons, bows, knives, hands and muscles. The Thule were also highly skilled hunters and their weapons were advanced. Their harpoon heads were detachable and the edges were rounded off to make it sharper. Their weapons were the bow, lance, and harpoon. The Dorset had soapstone pots and the Thule had soapstone pots, ivory necklaces, ivory combs, ivory belt buckles, hair ornaments and wooden masks worn by the shamans.

The Dorset had partly underground houses made of stone and sod. They made their houses by hand. People believe that the Dorset (known as Tuniit) slept with their legs up so that they could run faster. The Thule houses had frames made of whale bone covered with sod or stones or even skins. Their entrance was a small tunnel.

The Dorset had very little transportation. They either travelled on foot, sled or in kayaks. The Dorset didn't have any dogteams. The Thule had lots of ways to travel but they weren't that nomadic. They had dogteams, kayaks, umiaks, sleds and by foot.

The Dorset had a long parka down to the knees and it was laced with leather straps. Both Dorset and Thule had fur parkas. The fur was either from caribou, fox, hare, wolf or maybe even polar bear. The Dorset had leather straps to hold them down on the ice when they were sealing. The Thule also had parkas down to their knees and their kamiks had laces.

The Thule were more advanced and they had better equipment. The Dorset were good and skilled hunters to be able to go wherever the animals went.

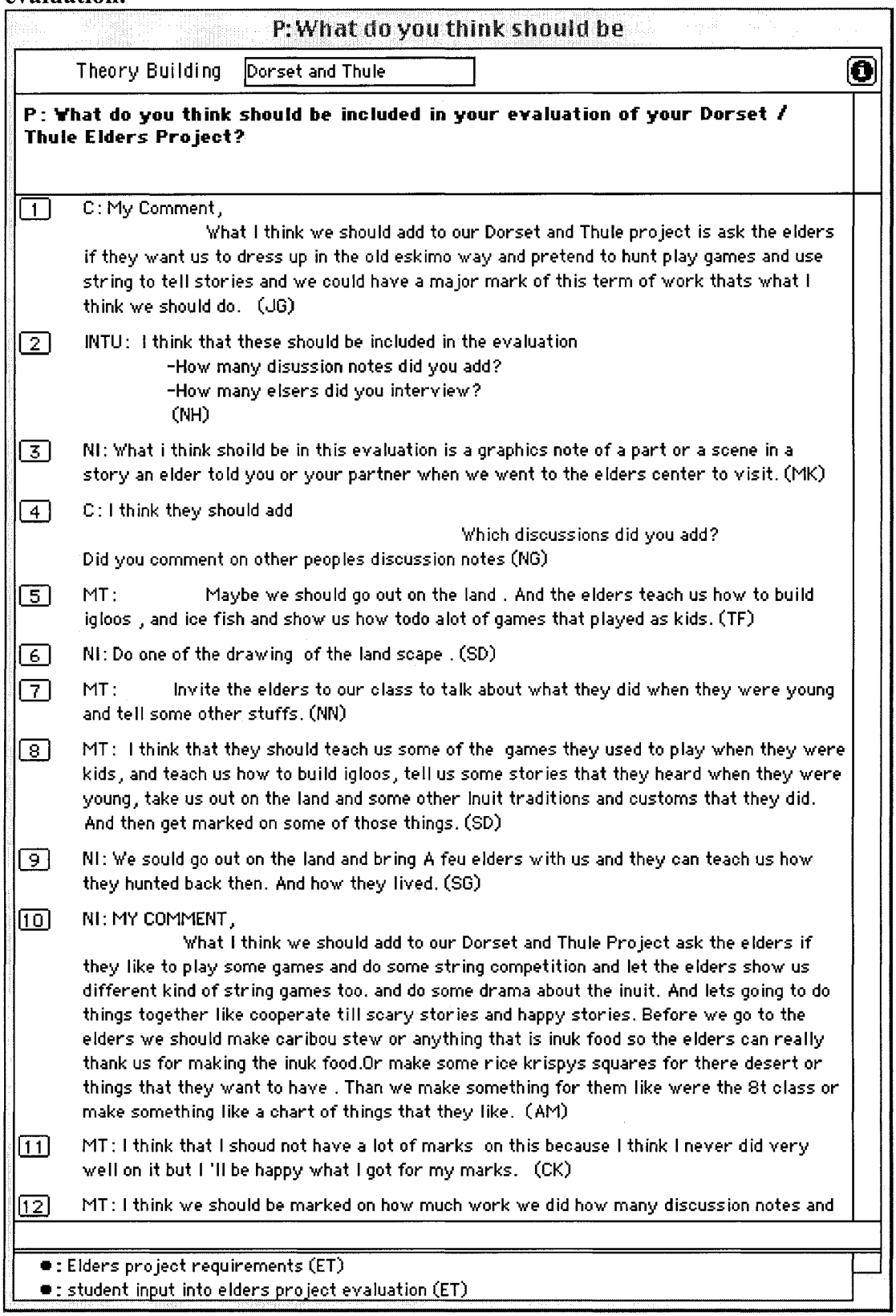
My conclusion is that the Dorset and Thule didn't die off. What I think is that the Dorset evolved and became the Thule, and then the Thule evolved more and became the modern Inuit today. So it could be like that or it could be that some of the Dorset moved

> back to Asia and came back to North America when they got smarter and the other Dorset that stayed behind died off. That's what I think happened.

A second example of advocacy-based, embedded and transformative assessment is illustrated in the request that students reflect on how they should be evaluated (Figure 4.6). Nor is the teacher exempt:

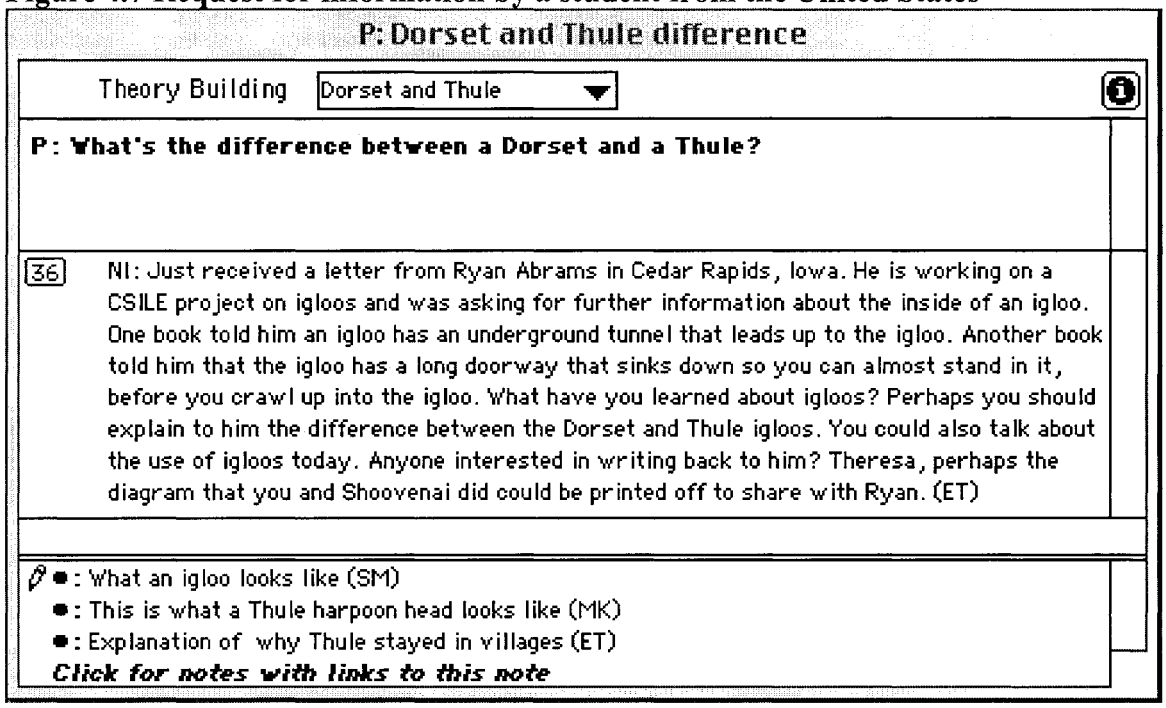
> I learned several things doing this unit. An advantage of CSILE is that a question from someone outside your class can take your unit in a whole new direction, which is beneficial to all! Also, just because a particular theme doesn't appear to have a CSILE component, doesn't mean that you should skip using CSILE as a springboard to learning for that unit. This unit that I dreaded ended up taking my students to a far greater depth in their thinking/learning than I ever dreamed possible! The other aspect is that using CSILE, as with all other teaching methods, you have to be adaptable. If Sandy hadn't posed that question, (in retrospect, a very obvious question!), the class wouldn't have ended the unit with such a clear idea of the similiarities and differences in essay form! Of course we're still looking for ideas on how to improve this unit for next year! We're open to suggestions!

Figure 4.6 Advocacy-based, embedded and transformative assessment in student self-evaluation.



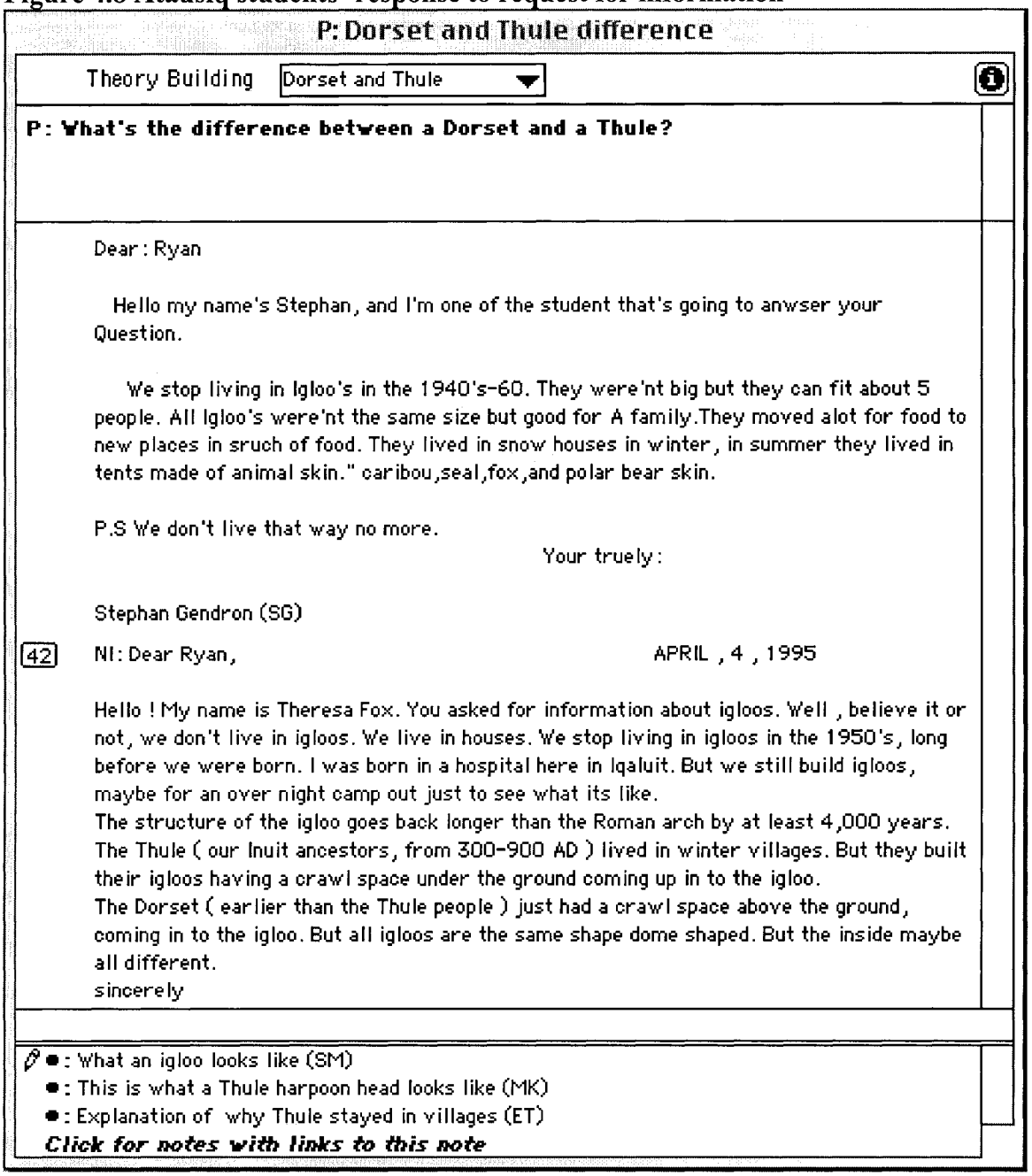
Illustrating that the students themselves have now become authoritative sources, they put their expertise to use to address another authentic problem, the request for information from a student in the United States (Figure 4.7).

Figure 4.7 Request for information by a student from the United States



Community knowledge, collective responsibility is reflected in the responses by the students at Atausiq school (Figure 4.8). Although the two sample responses are very different, they are both appropriate and are therefore also an example of the democratization of knowledge.

Figure 4.8 Atausiq students' response to request for information



Although the Dorset and Thule unit took place before the knowledge building principles had been formally articulated, it clearly illustrates them. Moreover, it illustrates them in the work of a group of fairly typical Baffin Inuit students. The Dorset and Thule unit is also a powerful illustration of the application of the intervention for collaborative empowerment within a bilingual, cross-cultural context. Inuktitut and English are both essential to the completion of the

unit, which could not have succeeded as it did without drawing both on the oral traditions characteristic of the Inuit as well as a literate *Qallunaat* framework for the construction of knowledge. A number of communities are involved. They include the elders, but also the CSILE/Knowledge Forum community within the school, myself as an outside contributor, and the wider community in response to which the students have the skills and expertise to act as experts. Although the teacher is very much in charge, a sense of collaboration exists between her, the students, and the other participants. Perhaps because it began with a very real problem, the unit itself is something of a process of negotiation and therein lies its transformative element. The assessment process builds on what students have brought to the unit and put into it and provides them with the opportunity to reflect on what they need to do to succeed next time. All in all the Dorset and Thule unit is contextually rich and cognitively engaging.

Do the intervention for collaborative empowerment and knowledge building actually inform each other in this process? Possibly. The negotiation of identities inherent in *Piniaqtavut* through the intervention for collaborative empowerment means that the teacher can negotiate the unit as it unfolds, taking advantage of the students' strengths and suggestions as well as unanticipated twists such as the question inserted into the database that launched a new level of inquiry. CSILE/Knowledge Forum provides a framework to hold this together and help it move forward. Would the first have happened without the second? Given this teacher, probably. Would it have been as rich and powerful an experience? Probably not.

The 1996-97 Marruuk database: Knowledge Building with the Class from Hell

We didn't call it the "class from Hell" to be disparaging. On the contrary, the phrase was more a term of endearment for a very challenging and diverse group that made what seemed at

the time extraordinary progress over the course of the school year. The challenge was exacerbated by the facts that Liz was new to teaching their grade level after a year in which illness had kept her out of the school for substantial periods of time. That I was going on educational leave and would be available neither to offer classroom support nor to ensure that the local area network functioned properly in a school with a very limited amount of resident expertise in that area further complicated the issue.

According to the class list in the CSILE/Knowledge Forum database, the "class from Hell" at Marruuk School had twenty-seven Grade 6 students on the roll although it would have been rare to find that many in class at the same time. All were Inuit and spoke Inuktitut as their first language but there the similarities ended. One student for example, had lived in an outpost camp for most of her life and had not been exposed to English until the summer immediately prior to joining the class. Another, the child of an Inuk educator, was fluent in both Inuktitut and English and quite likely could have held her own in either language with a group of sixth graders anywhere. The remainder of the class was spread out between these poles: as the suicide anecdote that begins this thesis indicates the home situations for many of them was difficult to say the least.

The suicide anecdote, the Indigenous Peoples unit that forms the backbone of the "day in the life" section that begins this chapter, and several of the innovations described in that same section are based on the Marruuk database. It was here that Liz replaced her handwritten journal with the "Classroom Research Journal" that became both a space for personal reflection and professional collaboration that we negotiated between us:

> Just wanted to say hello and let you know that I was able to log into the database successfully. I didn't want to read the notes in this topic unless you thought it was appropriate, but I thought it might be a good place to add some of my own comments on

> the database. Please let me know one way or another which you'd prefer. (McAuley, November 13, 1996)
>
> You certainly can read my journal notes. It is the place where I record my thoughts/observations about what is happening with CSILE. Some of the information you may find useful. Be forewarned. I am long winded - but I guess that comes as no surprise! (Tumblin, November 14, 1996)

That this negotiation and the collaboration that followed took place in the database at all was due to a technology called Apple Remote Access (ARA) that allowed a long-distance dialup connection to her classroom LAN before Internet access was available. And finally, the collaborative community participation of the Atausiq database became even more extensive.

Any of several of the topics from the Marruuk database could be used to illustrate a similar intersection of *Piniaqtavut* and the intervention for collaborative empowerment on one hand and knowledge building on the other much as did the Atausiq database's Dorset and Thule unit. Given the younger age of the students at Marruuk School and their shorter exposure to English this would probably be a worthwhile exploration. However, in terms of epistemic agency and the development of collective cognitive responsibility the Weather unit that ended the year stands out as an interesting counterpoint to the Suicide discussion that began it. It was this unit that occasioned the comment, "I'm not needed anymore." The full Classroom Research Journal entry in which the comment appeared is quoted below:

> I'm not sure whether to be disappointed or delighted! After reading the notes my students have done on weather, I've decided I'm not needed anymore!
>
> For a little background, our last theme was going to be a short one on weather as it was almost June. I was also going to be away from the class for 6 of those days so wasn't sure it would work. Decided to go out on a limb (difficult above the treeline!) and give a more open-ended assignment than I had done all year. This was a risk as these students came in at such a low level in terms of their literacy skills in English and their independence skills. In fact they informed me in September that all they used to do was fill in the blanks work!
>
> Basically we brainstormed as a class possible categories of weather. They each chose a category and a partner if they so desired. Then they had to come up with at least two

questions they wanted to research. It was recommended that one be a "what" question and one a "how" question, but they didn't have to be.

The only real instructions were that they had to have a problem note, a plan note a text note with new learning and a graphic note. If they wished they could do an experiment for bonus points. Frightening form a teacher's perspective as these minimal directions would take a leap of faith!

As I was so busy with year-end work, I was only able to tap into the database twice - once after they had entered their questions and just now. I'm amazed, thrilled and delighted! I know in class I have been impressed by how well they are working individually and with their partners on the computers and researching. As our school library was closed for the whole month of June, we went as a class to gather several milk crates of books the end of May for use in our classroom. During USSR they would regularly read some of these weather books. With graduation etc., there was very little time for whole class concept teaching on weather so students had little but their own experiences to guide them as they browsed through the books searching for information.

I can't get over how well they have done with very minimal assistance other than each other! They cooperated, went off on tangents of interest, commented back to each other in supportive ways or to clarify, responded to comment, started linking, etc. I watched some of them work from a distance. They would leaf through reference books, busily focus on certain sections, start internalizing the information and begin to attempt to write what they learned in their own words. They were motivated!

What is especially rewarding was to see what diverse areas they put attention on. Enoosiq, a good mix of practical and creative, recorded information on ways to measure weather, then wrote a little story on her own about a boy who measured weather. She also produced two graphics that demonstrated her ways of measuring weather to determine what to do next! I also enjoyed her supportive comments to her friend Shilaqi. Shilaqi is a perfectionist. Enoosiq told her that it is okay to be "rong" and make "mistak"!

Sapailiaq and Linda demonstrated their interpretations of lightning through a series of graphics with diverse views of lightning. They finished up with a graphic of someone who had a bolt of lightning coming from their finger!

Another keener who has learned a lot is Dennis. He had found more interesting information on hailstones than I ever cared to learn!

Sakeeta and Brian are an inquisitive pair who ask as many questions as they answer. Their progressions of question, comment, clearer question will hopefully lead to a greater understanding of why hot air rises.

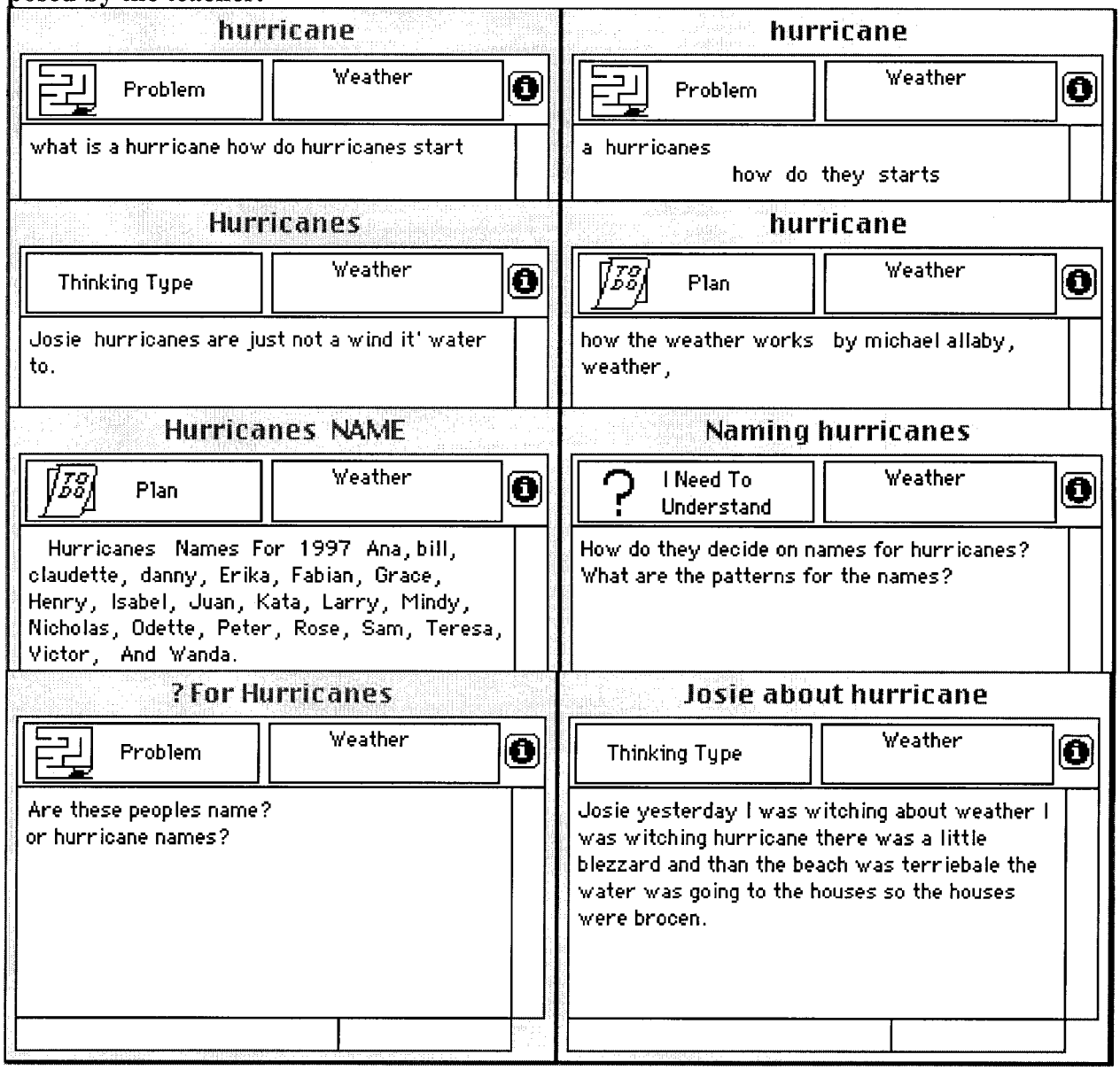
With the option of experiments, several are producing their experiments in class the first of the week. Hopefully we will also have time to go into more depth with a joint topic for those studying clouds and precipitation on how exactly rain, hail etc. form. That would be a natural follow-up with a larger group. Unfortunately next week is the last week of school so I'm not sure what will get done!

My report cards are calling so I must go. Wow, this has been an exciting group! (Tumblin, June 20, 1997)

As she feared and as the "last modified" dates on the notes indicate, no further contributions were made to the database.

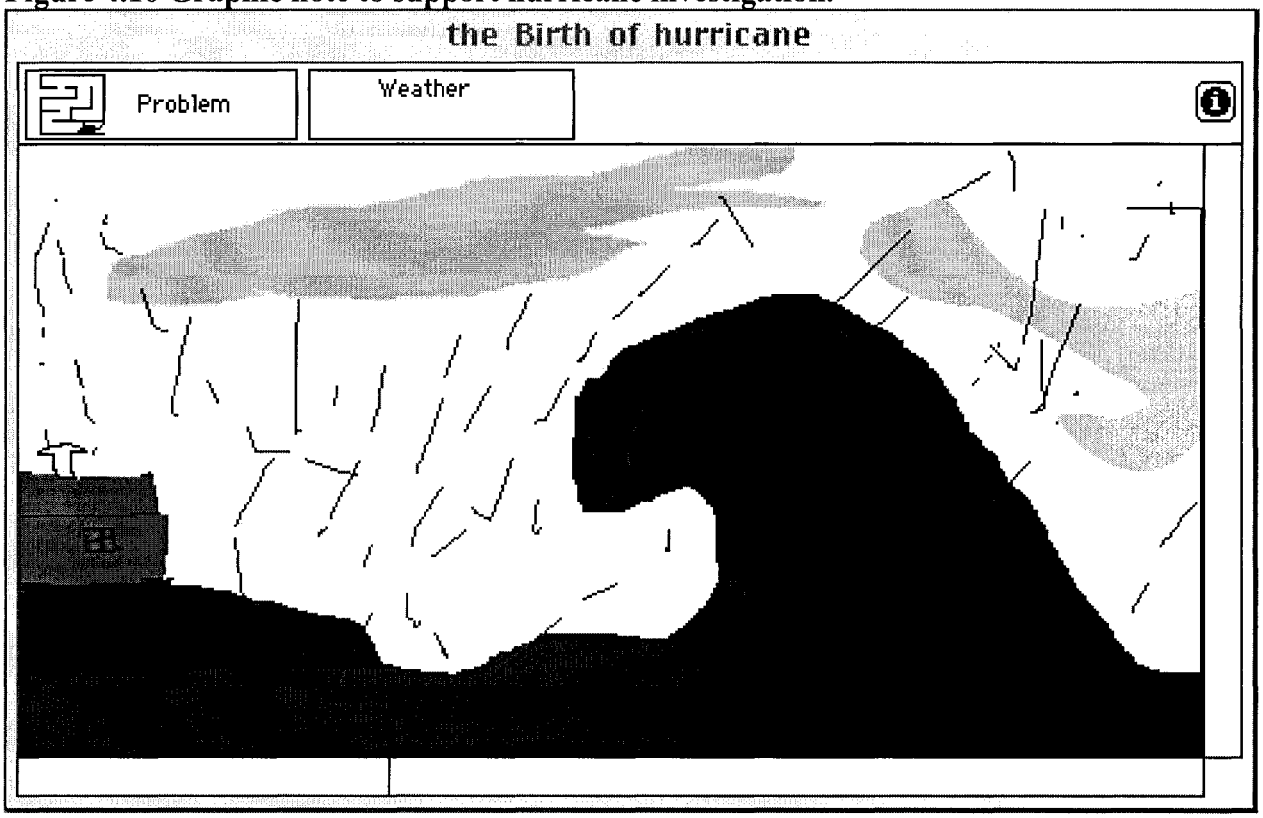
Is the weather unit actually the triumph this passage would lead us to believe? As might be expected the answer is not quite that simple. As the notes on hurricanes, one of what is probably the top two investigations, show the students did complete the assignment by posing a question, citing their references, and entering information (Figure 4.9).

Figure 4.9 The hurricane investigation. Notes 1 and 2 are problems posted by the student partners. Notes 3, 7 and 8 are related contributions by classmates. Notes 4 and 5 are the reference and information obtained respectively. Note 6 is a question for clarification posed by the teacher.



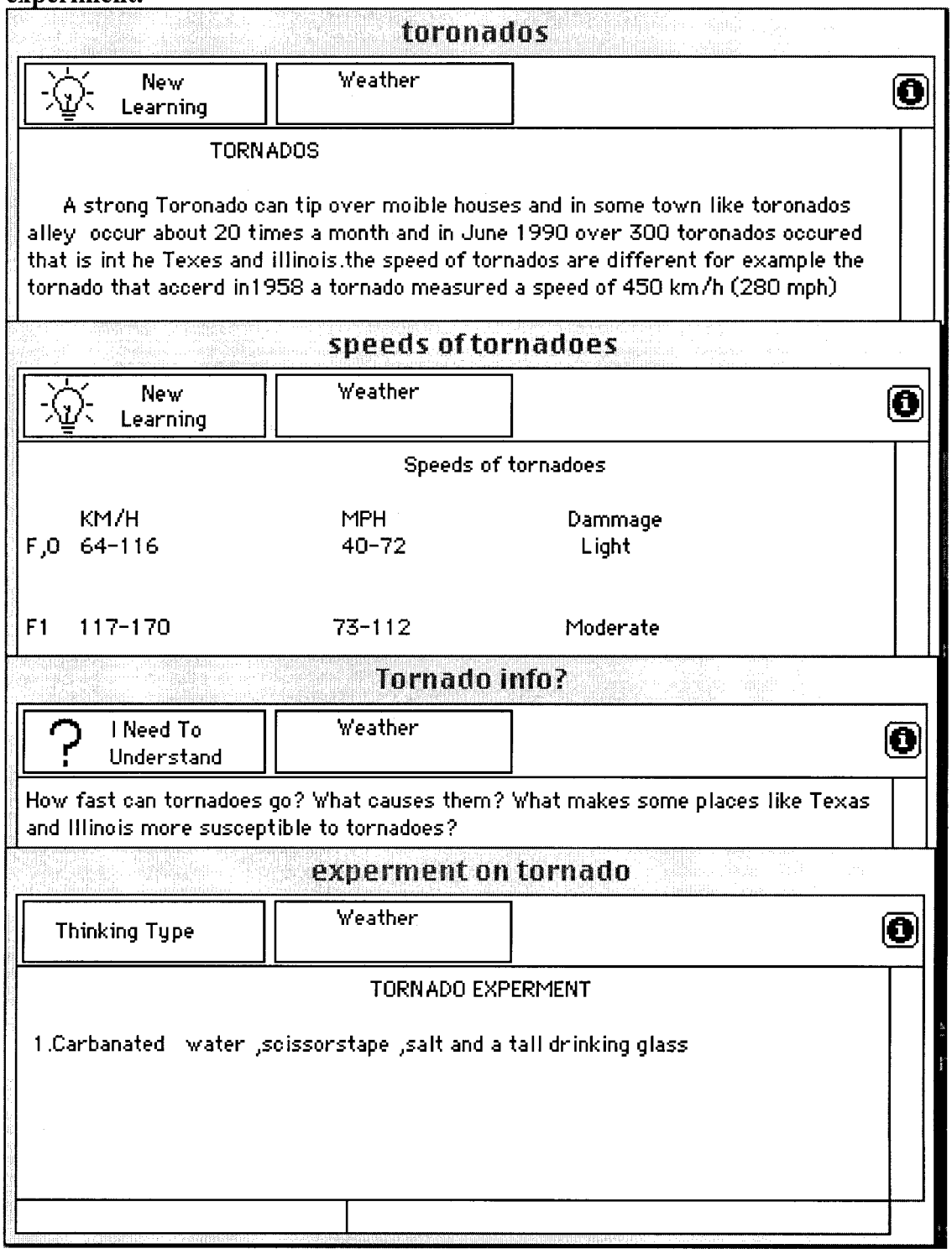
A graphic note illustrates their understanding of the birth of hurricanes (Figure 4.10).

Figure 4.10 Graphic note to support hurricane investigation.



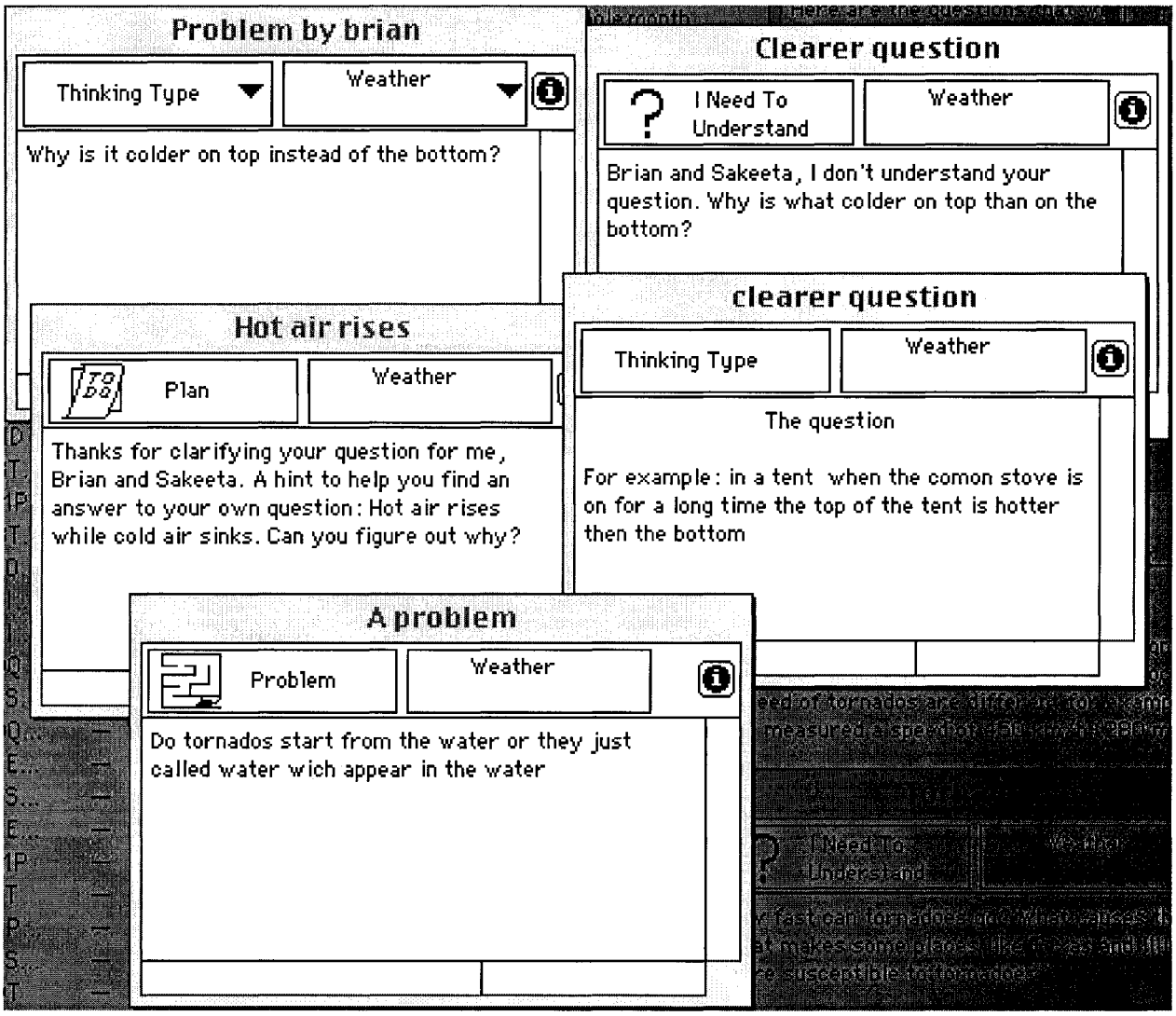
The investigation of Tornados conducted by Brian and Sakeeta displays the information they obtained, a question posed by the teacher, and the beginnings of their experiment (Figure 4.11).

Figure 4.11 Tornados investigation. Notes 1 and 2 contain research information obtained by students. Note 3 is a question posed by the teacher. Note 4 is the proposed Tornado experiment.



The Tornado investigation also encompasses something that could be considered the seed of a rise above and an improvable idea in that the final note in the sequence appears to be an attempt to refine the question that began the investigation (Figure 4.12).

Figure 4.12 A rise above? Notes 1, 3, and 5 were contributed by students, notes 2 and 4 by the teacher.



The notes do for the most part use the thinking types scaffolds that are intended to support the development of knowledge building discourse. The constructive use of authoritative sources is built into the assignment design.

In a more critical vein, while the topic has a large number of notes considering the length of time it was under investigation and the time of year (late spring, when it doesn't get dark and

many children are more likely to be in the playground at three in the morning than they are to be asleep in bed) most of them are short and show relatively little conceptual engagement with the weather phenomena they are supposed to address. Most of the notes that reference outside sources simply reproduce the text, albeit with the addition of typographic errors. The percentage of notes read is lower than the average for the year and few notes appear to take intentional advantage of any of the linking capabilities of CSILE/Knowledge Forum: there are relatively few comments and no discussion notes. Finally, while the graphic notes such as that in Figure 4.10 are related to weather, they do very little to go below superficial representations. In short, according to these indicators the Weather unit would appear to be more of a knowledge building disaster than a triumph.

The triumph of the Weather unit, however, lies in what the students did achieve not in what they didn't. In terms of the range of contextual support and degree of cognitive involvement (Cummins, 2001), the "class from Hell" applied themselves with minimal assistance to a context-reduced, cognitively demanding—in other words, academic—task and made substantial progress towards completing it. For an ESL class with challenging behaviours that had told the teacher at the beginning of the school year that they were used to "fill in the blanks" work, this is a significant, if limited, demonstration of epistemic agency, particularly given a project timeline that was probably one-quarter to one-third of what would normally have been allotted.

The Weather unit challenges the assumption that a difficult group of students with extremely limited English proficiency needs to focus on the basics before it can engage in cognitively demanding tasks. Instead, it argues that the process of negotiating identities that began with the Suicide topic and was scaffolded for the rest of the year through the use of

CSILE/Knowledge Forum contributed to a group of students with sufficient cognitive engagement and identity investment (Cummins, 2001) to exercise their version of epistemic agency to accomplish an academic task. It was this same group of students that asked their Grade 7 teacher at Atausiq School the next year why they couldn't use computers to learn the way they had the year before. They may not have been as far along the knowledge building trajectory as some students, but they had taken some very significant initial steps.

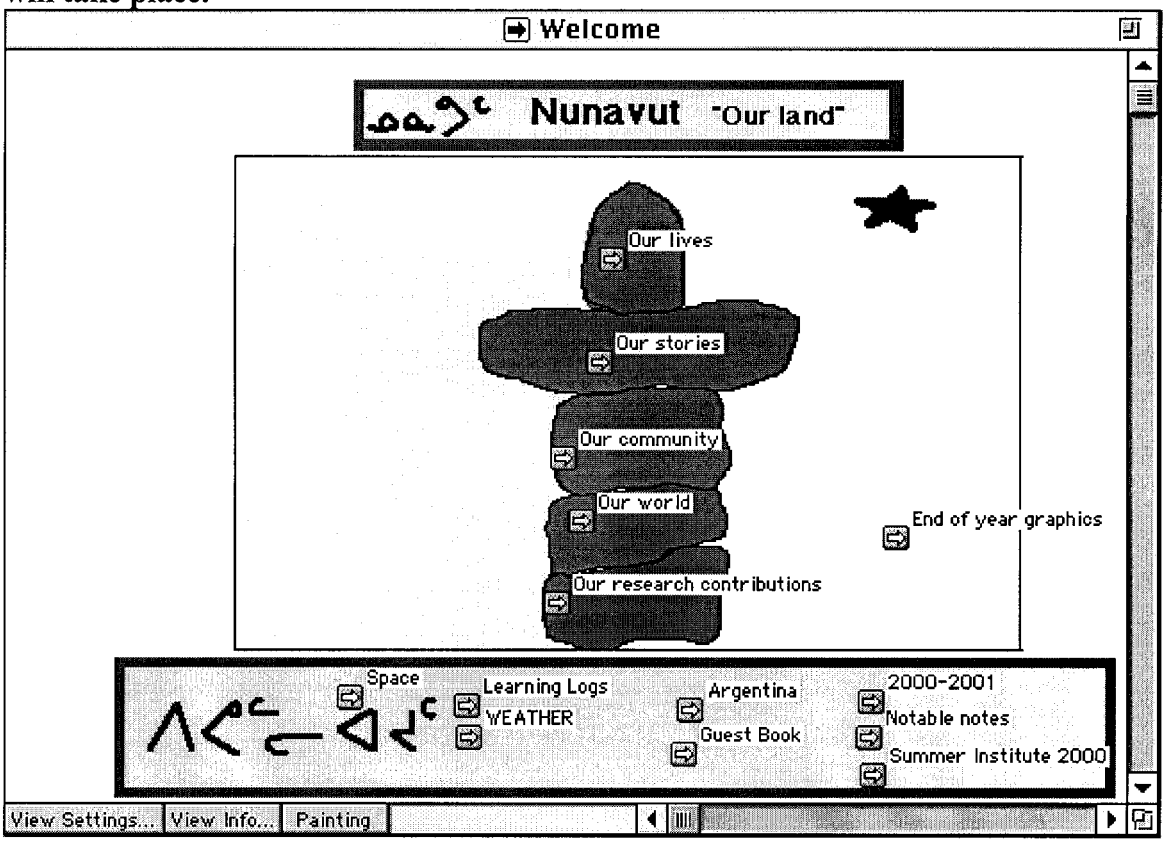
The Weather unit also demonstrates that contrary to the teacher's initial impression, she was most definitely still needed by the students. Her questions prompted students to clarify and revise their own notes and modeled how they could do the same for their peers. She was still required to organize and orchestrate the contextually rich and cognitively engaging experiences such as guest speakers and community-based tasks to support the topics being investigated and ensure that the students continued to grow linguistically and conceptually as well as in terms of their sense of self. Asking for student input to shape these experiences is time-consuming, challenging, and an essential part of the process of negotiating identities. At the same time it contributes to the students the sense of control of their own learning that is at the heart of epistemic agency.

Finally, the Weather unit demonstrates that a CSILE/Knowledge Forum database does not exist without a context. Taken as they stand, the notes that make up the "class from Hell's" investigation of weather could be interpreted as a cursory and superficial. In context, they situate the class firmly on a knowledge building trajectory.

The 1999-2000 Pingasut database: An Arctic Knowledge Building Community

Both the Atausiq and Marruuk databases demonstrate a *Qallunaat* teacher's attempt to negotiate the linguistic and cultural gulf between her and her Inuit students by means of the CSILE/Knowledge Forum knowledge building technology, an additive cultural linguistic incorporation, and collaborative community participation. In the former case, although the teacher was one of a group of teachers using CSILE/Knowledge Forum and the Dorset and Thule unit demonstrates at least one attempt by the Grade Eight class to make use of the knowledge resources contributed previously and separately to the database by another class, cross-grade collaboration is the exception not the rule, whether it be between teachers or students. In the latter case, the teacher worked alone with CSILE/Knowledge Forum in her school and collaboration in the database aside from that within the class took the form of a telementoring relationship between the teacher and a professional colleague. What would happen, though, if an entire school, students and teachers alike, sought to engage in a bicultural, cross-grade knowledge building environment? That is the question the 1999-2000 Pingasut School database, "Iqaluit Millennium," explores.

Figure 4.13 The Iqaluit Millennium Welcome view. The prominence of Inuktitut and the Nunavut flag gives a clear indication of the frame of reference in which knowledge building will take place.



The implementation of CSILE/Knowledge Forum at Pingasut School is possibly the one positive result of the termination of the partnership between the CSILE/Knowledge Forum research team and Apple Computer in 1994. With obligations to both groups I took advantage of the decision of the teacher at Atausiq School to withdraw from the project to offer the computers and an opportunity to participate to Paul, a teacher at Pingasut School whom I suspected might be interested. He was, and despite having to forge on alone as the single Baffin user of "CoLearning," the Apple-branded version of the CSILE/Knowledge Forum environment,

managed to maintain his enthusiasm until CoLearning[5] died and CSILE/Knowledge Forum was implemented in its stead.

Liz joined Paul at Pingasut School for the 1997-98 school year and with the support of their principal, the education council, and the BDBE they launched an initiative that aimed to bring CSILE/Knowledge Forum to most classes in the school. With Liz on educational leave in 1998-99, Paul sustained the momentum through the technical challenges of converting to an ethernet LAN, the switch to the radically new version 2.0 of CSILE/Knowledge Forum, and ongoing fund-raising. Liz returned to Pingasut School in 1999-2000 and Paul left to work for the Department of Education.

Although the 1998-99 database exhibits far less student involvement than we would have liked, it nevertheless represents a significant precursor to the Iqaluit Millennium database of the following year. As shown in Figure 4.14 it became a knowledge building space that enabled Paul in Iqaluit, Liz in Nova Scotia, and me in Yellowknife to work together both to sustain the implementation of CSILE/Knowledge Forum at the school level and to understand its intersection with wider educational concerns. Six views (topics) and over eighty notes discussed issues such as authentic assessment, literacy development, technical issues, and the relationship between theory and practice to build on and extend the role of the Classroom Research Journal pioneered in the Marruuk database. This time, however, the collaboration could take advantage of a full Internet connection.

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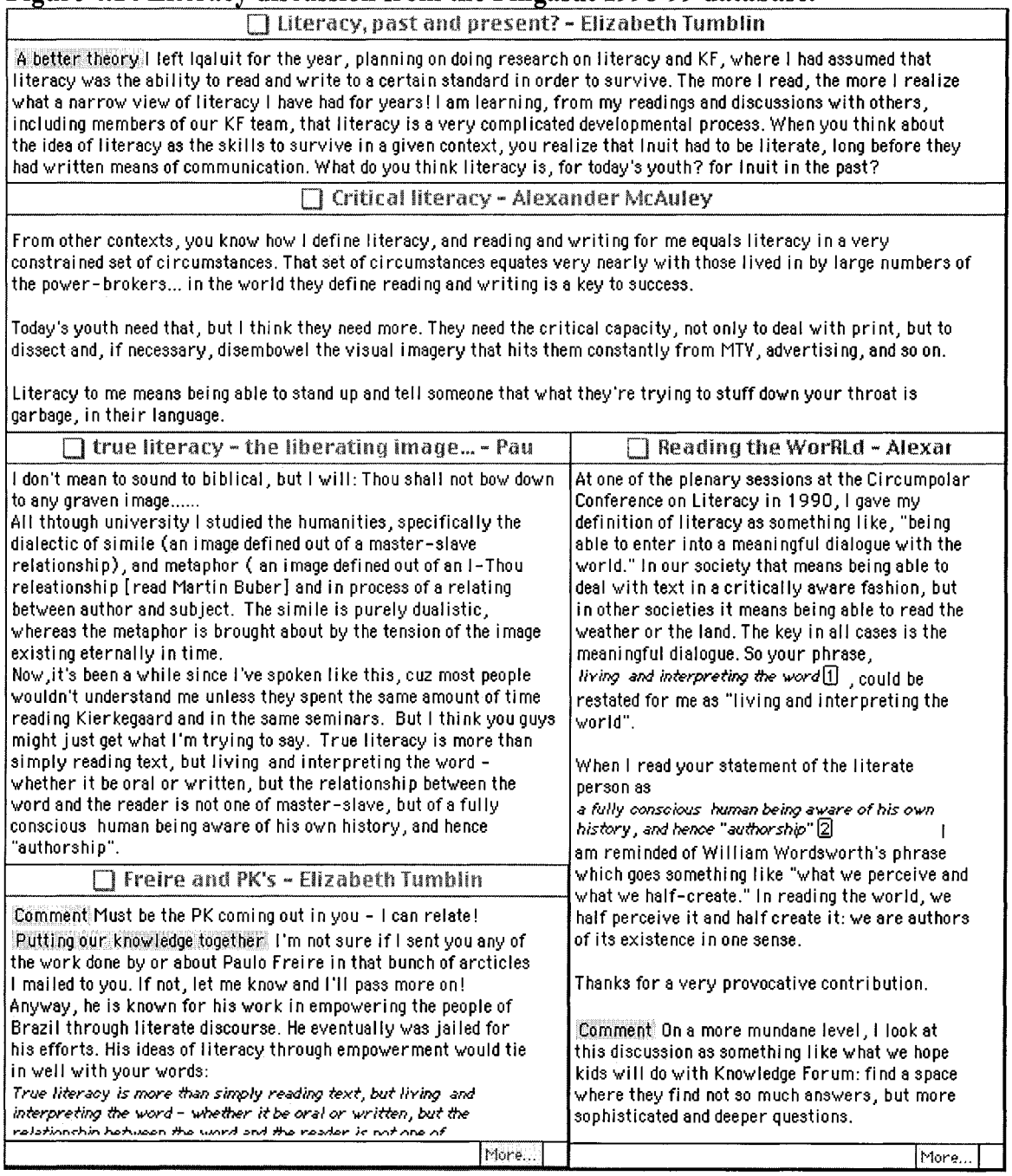
[5] Despite my disparaging tone, by this teacher's estimation and my own, CoLearning was probably a more polished and robust version of the version of CSILE/Knowledge Forum that existed at the time. What it lacked, however, despite Apple Computer's strong record in education, was a link to a coherent and critical pedagogical lens that would help focus ongoing implementation and development. Without that it became simply another network-based learning environment and as it was more complex to use than, say, the FirstClass system that *Takujaksat* was based on, CoLearning vanished with few to notice it had even existed.

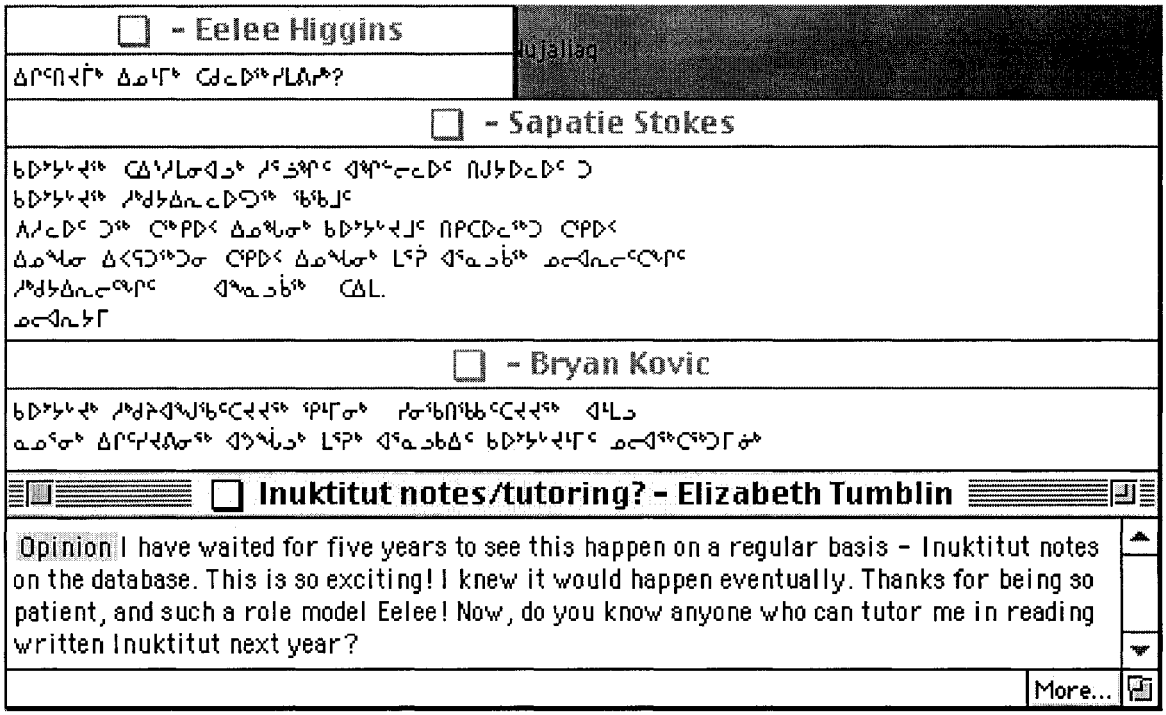
Figure 4.14 Literacy discussion from the Pingasut 1998-99 database.



Possibly even more significant, however, was the capacity of CSILE/Knowledge Forum 2.0 to the handle Inuktitut syllabic orthography. Four views were set up for work in Inuktitut and

under the direction of, Eelee, an Inuit teacher they received just over forty contributions (Figure 4.15).[6]

Figure 4.15 Inuktitut contributions to the 1998-99 Pingasut CSILE/Knowledge Forum database.



Although skimpy with respect to the amount of student participation, the 1998-99 Pingasut database nevertheless represents a significant illustration of the intersection of the intervention for collaborative empowerment and knowledge building at the professional level. The additive cultural/linguistic incorporation is evident. Less apparent though still important is the collaborative community participation, evident both in education council and BDBE support for the CSILE/Knowledge Forum fund-raising initiative and the cross-cultural collaboration evident in Eelee's presence in the database. Of even greater significance, however, is the evidence in Figure 4.14 of the three educators' engagement in the personal transformative

[6] The significance of Eelee's participation in the database and the commitment of the school to extend CSILE/Knowledge Forum to grades in which Inuktitut was the language of instruction cannot be underestimated. By way of contrast, when faced with an opportunity for an Inuit teacher to lead a CSILE/Knowledge Forum class in the 1996-97 school year, but strapped by a lack of hardware, Atausiq School assigned the hardware to another class.

processes that I argue in Chapter 3 are prerequisites for transformative pedagogy. The five-note discussion of what literacy means in the context of three *Qallunaat* educators working in a primarily Inuit environment represents time taken voluntarily from other responsibilities to move to a deeper understanding of an issue they feel is important. Each from a different perspective brings existing knowledge, experience, and beliefs about a particular educational context to bear on improving that context.

In the parlance of knowledge building another way of saying this would be that the five-note discussion brings real ideas together around an authentic problem, the same problem that I faced as a beginning teacher in Frobisher Bay and the discussion referred to at the beginning of Chapter 3 addressed: what can *Qallunaat* teachers do to contribute to schools in which Inuit students thrive rather than fade to the back of the class and disappear. The knowledge building connection does not end with real ideas, authentic problems, however. The voluntary aspect of the dialogue reflects epistemic agency and the distributed nature of the participants in terms both of geographic location and professional responsibilities reflects pervasive knowledge building and community knowledge, collective responsibility. Although there seems more convergence than divergence in the overall conceptual thrust of the discussion, idea diversity and the constructive use of authoritative sources is evident in the references to Buber, Kierkegaard, and Freire. That each note builds on those preceding, in one case incorporating a direct quote and in three making use of scaffolds is characteristic of knowledge building discourse. In its reflection on an expanding notion of literacy the initial note displays an awareness that ideas are improvable and is obviously in search of a rise above. The goal of the discussion, and of the professional views in the database as a whole, is a symmetric knowledge advance that will, to return to the beginning, address the original authentic problem. That the discussion is embedded

in the medium proposed as integral to addressing the problem gives it a reflexive quality, a sort of self-querying of the medium in an implicit process of embedded and transformative assessment. After all, if the medium won't stand up to the effective use of those arguably the best equipped to use it, it will not likely do so for those less well equipped. The question at this point becomes one of whether a small-scale demonstration of collective cognitive responsibility in a cross cultural environment that essentially involved only four educators can be taken up by a significant portion of a school and, if so, what it looks like.

The 1999-2000 Iqaluit Millennium database answers this question, at least to some extent. Nominally it involved 216 users, 175 of whom were students (89% Inuit, 11% non-Inuit) from Grades 1 to 5. Some of the older students had had experience with CSILE/Knowledge Forum the previous year. Eight educators participated, seven from Pingasut School (3 (43%) Inuit, 4 (57%) *Qallunaat*) and one a *Qallunaat* Grade 5 teacher from Maruuk School who had worked previously with CSILE/Knowledge Forum at the Grade 7 level at Atausiq School and whose class participated by logging in to the database from across town. Three additional educators, two from Hay River in the western Arctic, and myself, now resident again on PEI made up the remainder of the active participants the database. The thirty remaining nominal participants were registered in the database and may have browsed or contributed the odd note, but weren't a strong ongoing presence. Of the educators, Liz and Eelee were the only two with previous CSILE/Knowledge Forum experience. A grant from the Office of Learning Technologies (OLT) at Industry Canada subsidized release time for weekly meetings that dealt with collaborative planning and learning how to use the CSILE/Knowledge Forum software. Over the course of the year the database grew to 2151 notes in 140 views.

As might be expected given that she and some of her Grade 4/5 students had had prior experience with CSILE/Knowledge Forum, contributions from Liz and her class make up the bulk of the database. According to a year-end self-assessment [KB: embedded and transformative assessment. ICE: advocacy-based assessment.], the majority of the students enjoyed a unit on Space the most, not much wonder considering that it integrated a range of resources that included a videoconference with the Canadian Space Agency [KB: constructive use of authoritative sources. ICE: collaborative community participation], hands-on investigations into space-related phenomena that formed the class's contribution to the local science fair [KB: real ideas, authentic problems; embedded and transformative assessment; pervasive knowledge building], research into traditional Inuit knowledge of constellations [KB: idea diversity; democratization of knowledge; constructive use of authoritative sources. ICE: additive cultural/linguistic incorporation; collaborative community participation], and a collaboration with students in Hay River and their resident astrophysicist to share their new learning [KB: constructive use of authoritative sources; democratization of knowledge; community knowledge, collective responsibility; idea diversity; symmetric knowledge advance; pervasive knowledge building]. Except for the long-distance collaboration with Hay River that extends local knowledge building into the territory of Cummins and Sayers' (1995) critical collaborative enquiry, the roots of most of the elements of this unit can be seen in the units from Atausiq and Marruuk Schools described previously. The richness of the unit did, however, elicit at least one very sophisticated (if flawed) analysis of force and motion by an Inuit Grade 4 student:

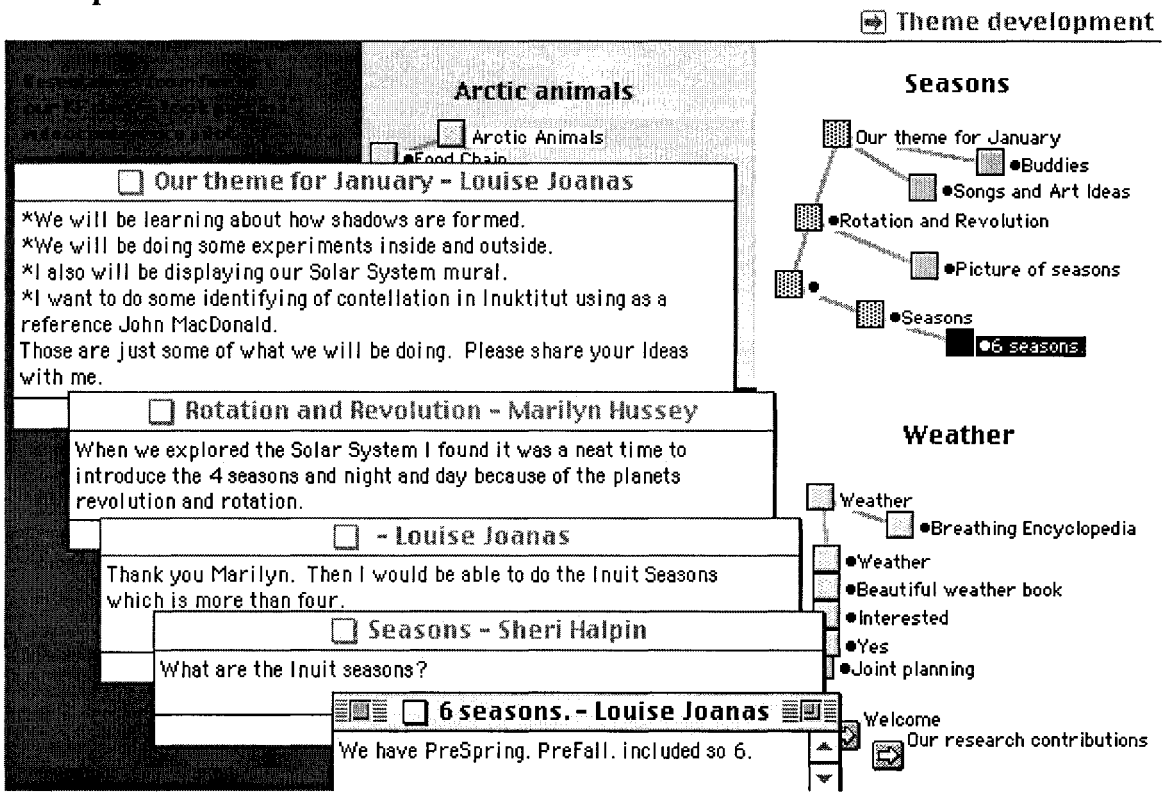
> Astronauts would need to conduct experiments on the moon. Astronauts have to know Newton's Laws. Newton's1st law is an object that is moving stays moving and an object that's at rest stays at rest. Newton's 2nd law says if we apply energy to it moves

> the same direction. Newton's 3rd law tells us that when one object hits another it moves it. …
>
> I learned that an object that's heavier has more energy. An object that is staying still, stays still until something moves it. An object is accelerating keeps moving until something stops it.

In short, while soliciting cognitive engagement and identity investment superior to previous CSILE/Knowledge Forum units on Space even with academically and linguistically less proficient students, the Space unit in the Iqaluit Millennium database is more a confirmation of previous efforts than a departure. What is a radical departure from previous efforts, however, is the degree of collective cognitive responsibility that permeated a substantial portion of the school culture in the effort to make CSILE/Knowledge Forum accessible in Inuktitut in the lower grades. This effort operated at both the educators' and students' levels.

At the educators' level, this effort included both the weekly meetings described above and ongoing work in the CSILE/Knowledge Forum database. As Figure 4.16 shows, the commitment to work collaboratively in this environment facilitated some interesting cross-cultural knowledge building episodes. Also, because the professional views were embedded in the same database that the students were working in, teachers were able to refer each other to relevant examples of student work or support materials without leaving CSILE/Knowledge Forum.

Figure 4.16 Cross-cultural educator knowledge building in the teachers' Theme development view.



As CSILE/Knowledge Forum novices for the most part just getting acquainted with the environment and its implications themselves, teachers of grades 1-3 relied on older students to work as peer tutors to introduce CSILE/Knowledge Forum to their classes. As Figures 4.18 and 4.19 show this resulted in a growing number of contributions to the database by younger, monolingual Inuit students.

Figure 4.17 Scaffolded peer collaboration between a Grade 1 and a Grade 4/5 student.

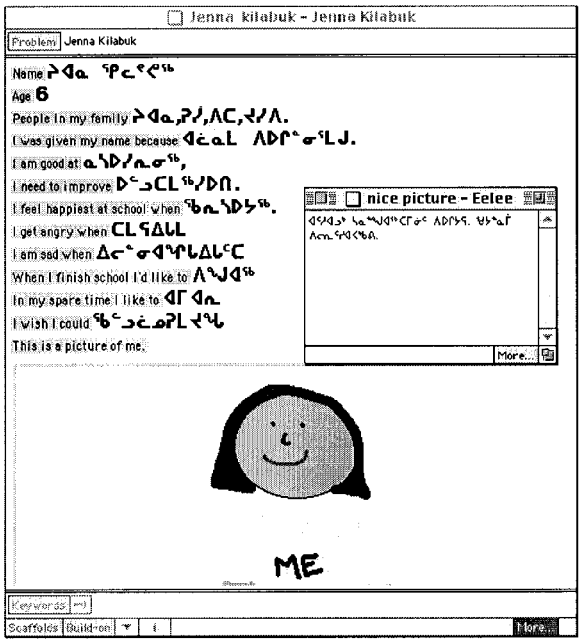
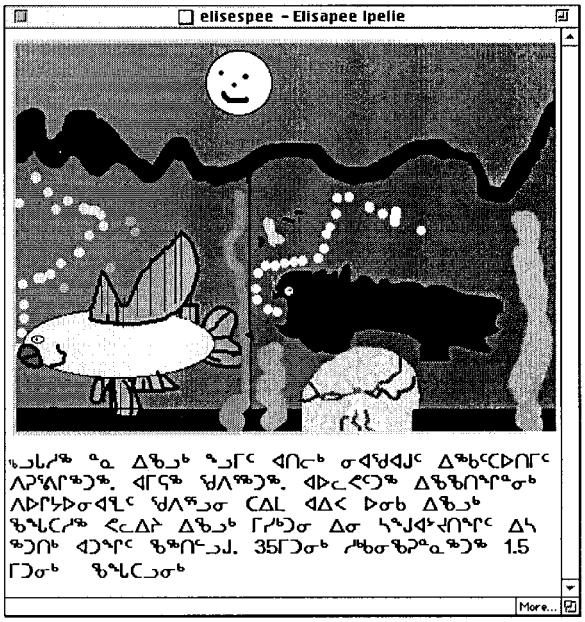
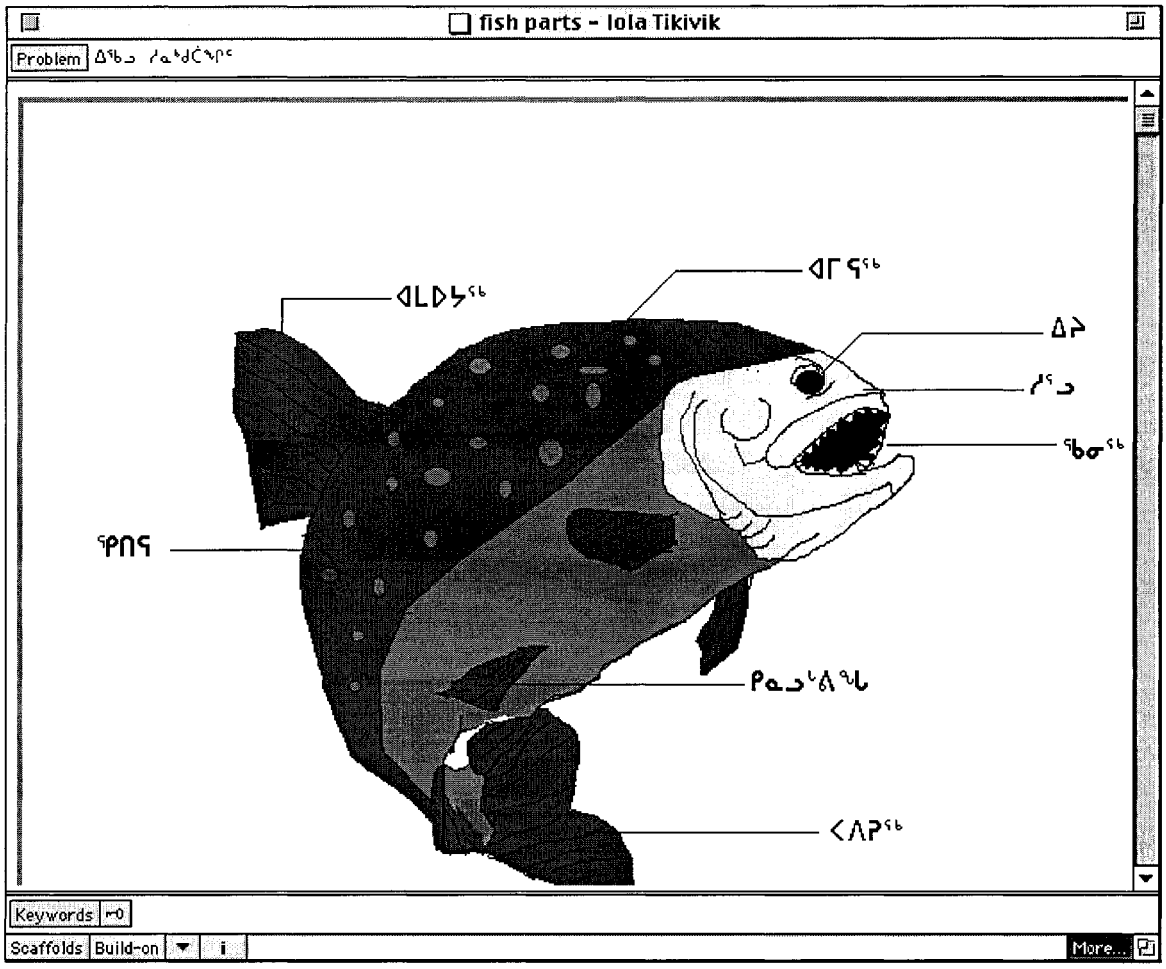


Figure 4.18 Database contribution by a Grade 3 student.



As Figure 4.20 shows, sometimes those contributions could be remarkably powerful.

Figure 4.19 Grade 3 student's hand-drawing of an arctic char with parts labeled in Inuktitut.



The Iqaluit Millennium database at Pingasut School represents a significant advance over previous Baffin databases. Progressive teacher expertise and technological advances contribute to a seamless environment within which Inuktitut knowledge, language and culture can coexist with and support the development of the critical literacy skills necessary for the 21st century. Moreover, the development and implementation of that environment at Pingasut School permeates the culture of the school: students become teachers, teachers learners, and the CSILE/Knowledge Forum database the virtual space that links the idea of what they're trying to create with the process of creating it. For that "spot in time" a collective cognitive responsibility crystallized around new possibilities for Inuit education in the Baffin.

Conclusion

On one level collective cognitive responsibility requires that students take more responsibility for the executive operation of the classroom. This includes such thing as choosing topics for investigation, planning to identify enabling tasks, assigning responsibilities, and monitoring and evaluating progress. As these are all traditionally a teacher's domain, collective cognitive responsibility therefore requires renegotiating the power dynamic of the classroom as students take up epistemic agency. To varying degrees all three databases illustrate this process and what is essentially the collaborative creation of power. But students are as much a part of a school as they are a class and collective cognitive responsibility consequently implies that they take on a role there as well. The Pingasut database, Iqaluit Millennium, demonstrates them taking on that role as they help younger students become part of the CSILE/Knowledge Forum community.

Similarly, on another level collective cognitive responsibility also implies a renegotiation of the power dynamic between teachers and the educational system, with teachers taking responsibility for aspects of education traditionally the purview of the school or board administration. Different from the officially sanctioned processes such as teacher representation on curriculum committees or the inherent self-contradiction of system-mandated site-based management, which are essentially top-down simulacra, collective cognitive responsibility for educators is uncertain, messy, and perhaps dangerous. For teachers at Pingasut School, this involved planning, fund-raising for, and implementing an educational environment for which there was erratic and contradictory administrative support.

Ultimately collective cognitive responsibility is a transformational challenge in that it requires that educators and students undertake to define and take on a real problem, something that education does not typically encourage.

Chapter 5

Conclusion

> Mr Clevver he says to Eusa, "That's a guvner lot of knowing youre inputting in to that box parbly theres knowing a nuff in there for any kind of thing."
>
> Eusa says, "That's about it. I don't think theres many things you cudnt do with that knowing. You cud do any thing at all you cud make boats in the air or you cud blow the worl apart."
>
> Mr Clevver says, "Scatter my datter that cernly is interesting. Eusa tel me some thing tho. Whyd you input all that knowing out of your head in to that box? Whynt you keap it in your head wunt it be safer there?" (Hoban, 1980, p. 45)

Introduction

This thesis begins with the irony of my reflection on the "successful" Grade 12 graduate who committed suicide and the coincidental suicide of the young person that sparked the first significant engagement with CSILE/Knowledge Forum at Marruuk School. From an incident illustrating both the challenges facing formal education in the eastern Arctic and what seems to be the potential of CSILE/Knowledge Forum to contribute to the effort to address these challenges, it poses as a focus question,

> To what extent can CSILE/Knowledge Forum technology and knowledge building pedagogy contribute to the reconciliation of traditional beliefs and values with the requirements of a modern school system to address the needs of Nunavut in the 21st century?

Chapter Two begins exploration of this question with Wordsworth's notion of the "spots of time" that nourish and inspire us amid the contentious and bewildering flow of day-to-day life, using it as a metaphor for the spaces in our lives that resonate more widely, almost as if they are significant nodes in a neural net. The "spot of time" at the staff campfire during my first few weeks as a teacher in the Baffin problematizes the charmed circle of privileged *Qallunaat* educators from which Inuit somehow seemed excluded, an

image that also echoes my early experience as a *Qallunaat* teacher of Inuit students. The remainder of the chapter outlines progressive efforts to break the charm and create an inclusive and productive teaching and learning environment, a process that eventually led to the appropriate use of computer technologies to solve real problems and ultimately CSILE/Knowledge Forum.

Chapter Three uses another Wordsworthian notion, the idea that "the mighty world/ Of eye and ear" is "both what they half create/ And what perceive" (W. Wordsworth, 1888, Lines composed a few miles above Tintern Abbey, lines 105-107), to focus on the dialogue between theory and practice that shaped both the largely personal efforts outlined in Chapter 2 and the broader background to educational innovation in the Baffin. It proposes a synthesis between the intervention for collaborative empowerment that underlies Baffin educational innovation, notably *Piniaqtavut*, from about 1985 on, and knowledge building, the theoretical framework underlying CSILE/Knowledge Forum, first implemented in the Baffin in 1992 as a way to support *Piniaqtavut*-based school restructuring at Atausiq School. The purpose of the synthesis is twofold. First, it contributes to knowledge building a way to acknowledge and address issues of language, culture, and power that might otherwise undermine the potential for academic success of minority students in classrooms taught by members of a majority group. Second, it provides a framework to structure both the knowledge construction that the intervention for collaborative empowerment identifies as an essential component of transformational pedagogy and the personal transformative process that is necessary for a majority teacher to engage minority students, in other words, to break the charmed circle.

Chapter Four documents the interplay of the two theoretical frameworks through the evolution of CSILE/Knowledge Forum in Baffin classrooms. It concludes with a description of what could be considered an extended educational equivalent of spot of time in which Inuit and *Qallunaat* educators jointly constructed a bilingual and bicultural educational environment that brought together traditional Inuit knowledge, more conventional academic knowledge, and advanced technology, CSILE/Knowledge Forum and the Internet. In essence, the charmed circle of Chapter 2 has been expanded to include both Inuit and *Qallunaat* in the collaborative creation of power.

This would seem a positive answer to the focus question of this thesis. It seems to confirm that CSILE/Knowledge Forum and knowledge building could to a large extent contribute to the reconciliation of traditional Inuit values and the requirements of a school system that would prepare Inuit students for the challenges that Nunavut and the twenty-first century are bringing them. There is, however, a difference between the potential contribution of an educational innovation and the likelihood it will ever take root in practice. The closing irony of Chapter Four, of course, is that an environment that seemed to have had so much potential is at this point no longer used in schools, an irony that recalls Brown's (Brown, 1992) prognosis for the widespread dissemination of communities of learners, another powerful educational innovation and one that intersected with CSILE/Knowledge Forum in the Schools for Thought initiative (Bruer, 1993). The remainder of this chapter will explore some of the implications of this irony, in particular what it may tell us about teacher transformation and educational change and the role of knowledge building and CSILE/Knowledge Forum in an increasingly diverse and paradoxically homogenous global knowledge society.

The Importance of the Individual

Perhaps the single most critical point of the intervention for collaborative empowerment is that

> coercive relations of power can operate only through the micro-interactions between educators and students. *Thus, educators, students, and communities can challenge this coercive process.* Although educational and social structures will impose constraints on resistance, these structures can never stifle the pursuit of empowering interactions on the part of educators and students. In short, educators always have options in the way they negotiate identities with students and communities. (Cummins, 2001, p. 203)

This is a powerful statement for an educator working in a board of education like the Baffin that once issued a teacher recruitment poster that bore the slogan, "Where individuals make the difference." In that it returns agency to teachers who see the challenges of a multicultural classroom and provides them with a framework to guide intervention for positive change, it is also hugely powerful in the "empire of solo practitioners" (Kerr, 1996, p. 14) which traditional school culture tends to be. They don't necessarily need the approval of the colleague in the next classroom or the initiative of the central office in order to change their classrooms for the better. It does not, however, address the issue of those who do not see. Nor does it provide an avenue leading to joint action. As Chapter Three argues, it engages primarily those who are already predisposed to transformation.

The vision of the BDBE for bilingual Inuit education, the creation of *Piniaqtavut*, and the collaboratively planned junior high restructuring at Atausiq School seemed to provide systemic support for a community that would take up the intervention for collaborative empowerment to make a difference for Inuit students at the junior high

school level. CSILE/Knowledge Forum appeared to provide an empirically grounded technology that would support and enhance this process by providing practical and conceptual tools to support teachers' transformation of their practices.

Chapter Four illustrates that this was the case for one teacher. Hers was the most dramatic example as she had the longest and most consistent involvement with CSILE/Knowledge Forum, but other less extensive examples can be found as well, the database of the Grade 10 class also mentioned in Chapter Four being a case in point.

While CSILE/Knowledge Forum did provide a structure for teachers such as these who seemed predisposed to personal growth and transformation, it didn't seem to have much of an effect on those who weren't. In no way conclusive, this observation recalls the tendency of teachers who label themselves constructivist to better integrate the Internet in their classrooms than those who do not (Becker, 2000), and Miller and Seller's (1985) contention that educators' metaorientations to curriculum are largely set by the time they enter the classroom and very difficult to change. The implication for implementation of CSILE/Knowledge Forum and/or knowledge building is that even with systemic support and incentives, individual educator beliefs or metaorientations may be the determining factor of success. This certainly appears to be the case in the Baffin where the tenaciousness of a few individuals enabled the creation of the Iqaluit Millennium database when the vision had died elsewhere. Given the growing interest in knowledge building and CSILE/Knowledge Forum in the design of schooling more suited to the demands of the knowledge society (Smith, 2002) this is potentially a significant observation and one that needs further investigation.

Systemic Support for Collective Cognitive Responsibility

Because the CSILE/Knowledge Forum initiative in Baffin schools ended just as it seemed to be achieving its deepest level of success, it's tempting to consider it a failure. What failed, however, was not CSILE/Knowledge Forum nor the initiative, but the attempt to sustain and disseminate it, something that embodies the tension between the emergent process through which the Iqaluit Millennium database was created and the shifting systemic context in which it existed.

The "spot of time" represented by the Iqaluit Millenium database resonates across multiple contexts. Its integration of Inuktitut and English, traditional knowledge and contemporary science, elders and the Internet embody in the micro-interactions of the classroom the same negotiation of identities that led in the macro-interactions of the wider world to the drive for Nunavut as the embodiment of Inuit identity and autonomy within the context of an increasingly interdependent and interconnected world. In terms of the educational structures of the school, the use of the expertise of older Inuktitut-speaking students to support the involvement of both the younger students and their teachers represents a shift of traditional responsibility from educators to students, but also a validation of the ongoing utility of Inuktitut. The role of the CSILE/Knowledge Forum database as a medium to catalyze teacher growth as well as students' represents a shift from teacher as expert to teacher as more expert, different in degree from students, perhaps, but not in kind. If not fully realized it is nonetheless a nascent example of collective cognitive responsibility in which all participants have a role in advancing the agenda. That collective cognitive responsibility developed at least partially as a result of

the dissolution of the forces that had initiated the project in the first place, in other words, in the absence of consistent and coherent systemic support.

Initial implementation of CSILE/Knowledge Forum in the Baffin was the result of systemic support of the Department of Education, BDBE and Atausiq School, external groups such as Apple Computer and the CSILE Research Group at OISE/University of Toronto, and local participants. However, as upper-level systemic support devolved into benign neglect and staff turnover and shifting administrative priorities at the school cut into the structures at the junior high level that CSILE/Knowledge Forum had been implemented to support, responsibility for its evolution progressively fell on a small group of individuals that ultimately proved unable to sustain itself. As a result the collective cognitive responsibility that helped CSILE/Knowledge Forum to its deepest expression in the Baffin was also the source of its collapse.

Supported but not constructed by the larger educational structures in which they were embedded, the success of the Iqaluit Millennium database and what it achieved in terms of a bilingual/bicultural interactive space were the manifestation of the collective cognitive responsibility of a number of individuals who perceived the potential connection between what they saw in their classrooms, *Piniaqtavut*, and CSILE/Knowledge Forum. In that sense it embodies a self-organizing community exercising its agency to develop a particular set of ideas. To the extent that it outlived the companion initiative with which it was launched as a part, the restructuring of the junior high at Atausiq School, the successes of the Iqaluit Millennium database can be seen as a triumph of collective cognitive responsibility as compared to a more conventional, strategic planning process. An emergent process, it is less like the imposition of order on

chaos than the order emerging from chaos that is characteristic of self-organizing systems or neural networks. The connectionist model of mind underlying knowledge building is congruent with the latter as are more current models of educational change that begin to consider the chaotic elements of conflicting forces as essential contributing elements (Fullan, 1999).

One of the criticisms leveled at the use of CSILE/Knowledge Forum in the Baffin was that it could be implemented only by a gifted teacher, and therefore might be good in theory but not in practice. This criticism is one commonly brought against CSILE/Knowledge Forum and knowledge building (Scardamalia, 2002) and although specific examples from challenging classrooms such as those in the Baffin can always be brought out to counter that claim, they are subject to the counter-claim that they are nothing but "golden moments" (Brown, 1992), nuggets mined from the overwhelming dross surrounding them. While the Baffin databases demonstrate that academically very weak students can make significant, if limited, steps towards knowledge building in a second language, and in so doing can create a space in which power and identity are renegotiated, they also demonstrate how challenging those initial steps can be. If CSILE/Knowledge Forum and knowledge building are to become common practice as opposed to best practice some kind of constructive tension is required between the systemic and individual. An investigation of that intersection may be possible at sites where there has been long term systemic support such as Louisville, Kentucky or in the growing number of other sites around the world that are exploring knowledge building.

Coming to Terms with a Moving Target

Although Chapter Four outlines the knowledge building principles implicit in the implementation of CSILE/Knowledge Forum in the Baffin, it is not meant to imply that those principles specifically guided the implementation process or that they are well articulated through it. The nine distinguishing characteristics of a knowledge-building community model for schooling that did provide explicit guidance to the Baffin experience (Bereiter & Scardamalia, 1993) preceded those outlined in Chapter Three by nearly a decade and are both much less comprehensive than their successors and a much more accurate reflection of what Baffin educators were aiming for and achieved in their CSILE/Knowledge Forum classrooms. That indications of the more recent versions can be seen at all in the Baffin databases that preceded them is a form of validation, just as my classroom experiences validated for me the interactive/experiential approaches advocated by *Piniaqtavut.*

There is a challenge here as well, however. Regardless of the need to put education on a scientific basis more like the one that has transformed medicine over the past hundred years (C. Bereiter, 2002a) or the benefits that may accrue from that shift,[1] educational practice is currently an art or a craft. A teacher education program, the logical place to begin such a shift, would have to address beliefs grounded in nearly twenty years of experience before it could make progress. And schools, the sites that would have to sustain and continue the shift are the sites from which those twenty years of experience originated. In this context, the radical shift from nine principles in 1993 to twelve much

[1] Or the drawbacks. Even disregarding the growing interest and respect for alternative practices such as acupuncture, medical schools such as that at McMaster University in Hamilton have adopted more holistic approaches to mainstream western medical training. Of course this shift is scientifically justified.

more sophisticated ones in less than a decade later may be indicative of a rate of change that educators, currently an atheoretical lot at best, would have a hard time keeping up with should they desire even to try.

If the current emphasis on knowledge translation in the medical community is any indication, a more scientific footing than education may intensify the challenge of practitioners keeping up with research. At least one current initiative is looking into the role that knowledge building technology may play in knowledge translation (Campbell et al., 2003). The development of the three-part organizing grid for the twelve knowledge building principles proposed in Chapter Three may be seen as an effort towards knowledge translation as it attempts to make those principles and the system beneath them accessible to practitioners.

Conclusion: Eusa and Mr Clevver

By way of contrast to the "spots of time" in Wordsworth's half created, half perceived romanticism, this chapter begins with an allusion to the gritty, post-apocalyptic horror of *Riddley Walker* (Hoban, 1980) The passage cited is part of a longer section in which a puppet show dramatizes the relationship between knowledge and power that brought about the apocalypse in the first place, at least according to the descendents of the survivors. Impressed by the amount of knowledge Eusa is downloading from his head to the box and intrigued by the potential of what it might do, Mr Clevver asks Eusa why he's doing it when it might be safer to keep it in his head. In response to Eusa's assertion that the knowledge in the box will help him make the "Good Time" by which he means, "Every thing good and every body happy and teckernogical progers moving every thing

frontways farther and farther all the time," Mr Clevver announces that he's looking forward to having that secret himself. Eusa indicates that the Good Time is neither a secret, nor is it just for one person. Mr Clevver replies, "You must be joking Eusa who dyou think youre working for." He takes possession of the box and drains Eusa's mind dry, by implication leading to the Bad Time in which the novel is set.

One of the more contentious claims for knowledge objects in Popper's World 3 is that they have a life of their own (Popper, 1972) and he uses as an example of this the idea that civilization could be recreated after a disaster from the contents of a library. Perhaps the reason I am drawn to *Riddley Walker* is that it seems an eloquent mockery of an example that seems to have about as much weight as the question, "If a tree falls in the forest with nobody to hear it, would it make a sound?" Perhaps it would, perhaps not, but does it really make a difference? What does make a difference is if someone is there to hear it. It is the human interpretation of, interaction around, and application of knowledge objects and ideas that gives them life.

In the one instance in which ideas do have a definite life of their own, they become ideologies. Unquestioned, unexamined, and unseen, ideologies may control how we move interpret, interact with and act upon the world. "Technology is progress." "Progress is good." "Teckernogical progers moving every thing frontways farther and farther all the time." "These students could never do that." " 'Inuit [have] no thoughts.' " (Brody, 2000, p. 273) We breathe life into these ideas and if unchecked and uncontested thereafter they suck life and possibility out of us. We become puppets in the same way as Eusa and Mr Clevver.

Shallowly interpreted, dumbed down for widespread consumption, knowledge building has as much potential as any other educational reform ideology, another panacea for the ills of education: "Every thing good and every body happy." In essence, however, knowledge building is both a process for creating classrooms more suited for the demands of a twenty-first century knowledge society and a process that begs to critique both itself and the world to which it contributes, be it the small-d of the classroom or the large-D of the wider world. Fully realized knowledge building has difficulty as an ideology because it subjects itself to constant critique. CSILE/Knowledge Forum and knowledge building together create a collaborative discourse space in which the negotiation of identities can take place around collaborative knowledge building. Without constant review, however, it's a space that can also be colonized.

The central role of Inuktitut language and culture in Baffin education implies something more than a generic curriculum delivered in Inuktitut: it implies a respect for and understanding of Inuit ways of looking at the world and requires that they help restructure the processes of schooling, processes which for the most part reflect the ideology of a dominant southern culture. Genuine respect for this restructuring requires that Inuit and non-Inuit alike confront and interrogate their unstated and unperceived assumptions about schooling and in the process build something better. Embodied in the implementation of CSILE/Knowledge Forum in the Baffin described in this thesis, the intersection of knowledge building and the intervention for collaborative empowerment provide a framework to do so.

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