

# Learning Connections Phase Three Evaluation Report

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## Executive Summary

Learning Connections (LC) is an online professional development community project modeled on and supported by the Advanced Broadband Enabled Learning (ABEL) Program at York University and funded by the Ontario Literacy and Numeracy Secretariat (the Secretariat). Its focus is on the improvement of student achievement in literacy and numeracy in the Junior Division (grades 4 to 6) through job-embedded professional learning. The intent of LC is to build capacity within the participating districts and schools to further student learning and achievement and to support the participants as they implement the Ministry of Education's Foundations program to advance literacy and numeracy. Three phases have been completed: Phase 1 – project initiation in winter 2005 to the Summer Institute, July 2005; Phase 2 – the 2005-2006 school year; and Phase 3 – Summer Institute, July 2006 and the 2006-2007 school year. The focus of this report is on Phase Three of the project.

During Phase 3, the project management made several significant changes designed to address issues identified in the first full school year of implementation. They scaled up the project to include all Junior level teachers in the nine participating school districts in an effort to create a larger, more vibrant learning community. Management also began to communicate directly with school board decision-makers to help them gain a greater understanding of the project, rather than communicating through Student Achievement Officers. They abandoned the idea of trying to address systematic change at the board, school, and teacher levels in favour of focusing on teachers. A new strategy was adopted of identifying in each board “district champions” whose role is to provide leadership within the board, be a board advocate of LC, and serve as a board contact for management. Three part-time facilitators were hired with responsibility for numeracy, literacy, and francophone support respectively. Roles, responsibilities, and relationships with the Secretariat *vis-à-vis* LC management became much more clearly defined and very cordial during this phase, and funding issues were resolved. Lastly, LC's staff made design improvements to the LC web portal in response to concerns expressed the previous year and worked on attempting to resolve technical problems with videoconferencing.

Despite these positive changes, the project still faces some significant challenges with regard to implementation. Foremost is the need to create a more active online community, particularly as this is the main *raison d'être* for the project. Participants tend to log on occasionally, read some postings, or download a resource, but rarely contribute by posting questions or responding to others' postings. As expected the champions were more active in the portal than teachers, although neither they nor the facilitators were able to motivate teachers to participate more. Alignment of LC with the participating board's policies and priorities for literacy and numeracy professional development continues to be a problem as well. At the higher or more abstract levels, LC supports the boards' goals; however, when drilling down to specific professional development plans, priorities, and strategies LC does not figure prominently into them. This issue seems even more acute in francophone schools where there appears to be some tension between LC

duplicating boards' online initiatives. A third challenge relates to technical matters. The design of the portal continues to draw complaints from participants who see it as confusing to navigate and difficult to locate materials. Problems with videoconferencing still seem to plague the project despite Herculean efforts of the project's technical staff. These problems appear to stem partly from network infrastructure problems within boards and partly from the state of desktop videoconferencing applications which have not matured sufficiently to provide reliable, high quality communications that participants have come to expect.

With regard to the impact of the project on Junior level teachers, our teacher survey results indicated that, on the whole, teachers tend to support the major thrusts of the Ministry's expert panels on literacy and numeracy. Last year literacy teachers that we observed needed improvement in three areas: media and technology use, making accommodations for diverse students, and use of gender-sensitive practices. On our return visits to these teachers' classrooms, we found that significant progress had been made in the first two of these areas; however, most classrooms still need more work in incorporating gender-sensitive practices. Otherwise, literacy teachers fared well in all other aspects of their teaching that we observed.

Our observations of numeracy teachers suggest that they are strongest in teaching all five strands of the mathematics program rather than just number sense and numeration, use of open tasks with students, and in emphasizing discovery. They are moderately strong in having students work together to explore ideas, in building student confidence, and in using a variety of manipulatives and tools. We noted two areas of concern where declines from last year were observed: teacher assessment practices and few teachers having students communicate their mathematical understanding to one another.

When we analyzed the progress of schools in increasing the percentage of students meeting provincial standard on the EQAO tests, we noted that there has been steady improvement in Reading for most schools and to a lesser extent for Writing. Progress on Mathematics is cause for concern as there is a downward trend for most schools. Although LC cannot be assumed to be the cause of any of these gains or decreases, because LC schools typically have several initiatives taking place at the same time, the results are indicative of areas where priority should be placed.

We believe LC has strong potential to assist in the transformation of Junior Division literacy and numeracy instruction in participating schools. During Phase 4 there is every reason to be optimistic that it will be able to reach that potential if the following nine recommendations are adopted:

1. Ask participating school boards to re-affirm their commitment to LC and to commit funds to release teachers to participate more fully in the project.
2. Strengthen efforts to communicate with participating school boards, and particularly principals, about the goals and successes of LC.
3. Continue to support and build on the champions model.

4. Consider transforming the project to a blended learning initiative to enhance community building.
5. Refocus the annual summer institute to be a more integral component of the project.
6. Introduce project activities that emphasize the problematic areas in literacy and numeracy instruction that this report identified.
7. Increase the emphasis on the numeracy component in all activities of LC.
8. Conduct a usability study of the LC portal to identify problematic areas with the goal of improving the site.
9. Continue with the strategy of producing streamed video sessions.

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## I. Introduction

Learning Connections (LC) is an online professional development community project modeled on and supported by the Advanced Broadband Enabled Learning (ABEL) Program at York University and funded by the Ontario Literacy and Numeracy Secretariat (the Secretariat). Its focus is on the improvement of student achievement in literacy and numeracy in the Junior Division (grades 4 to 6) through job-embedded professional learning. The community participants include school board directors, supervisory officers, principals, district literacy and numeracy trainers, lead numeracy and literacy teachers, teachers, and information technology managers from nine school districts (six Anglophone, three Francophone) across the province. The intent of LC is to build capacity within the participating districts and schools to further student learning and achievement and to support the participants as they implement the Ministry of Education's Foundations program to advance literacy and numeracy. The project is structured in three phases: Phase 1 – project initiation in winter 2005 to the Summer Institute, July 2005; Phase 2 – the 2005-2006 school year; and Phase 3 – Summer Institute, July 2006 and the 2006-2007 school year. At the time of writing an extension to the project was approved, therefore LC will be entering Phase 4 during the 2007-2008 school year.

The focus of this report is on Phase Three of the project. It covers our findings on project implementation and management, school principals', champions', and teachers' perceptions of the project, classroom observations, the online portal, and student achievement in participating schools. We conclude with a summary and recommendations for program improvement.

In preparing this report we interviewed principals, surveyed champions, observed the same teachers again whom we observed a year ago, studied the portal, and analyzed EQAO achievement data. We also interviewed a representative from the Literacy and Numeracy Secretariat and interviewed the project manager and director. More details on the procedures for data collection are provided in each section as appropriate.

## II. Project Implementation and Management

In this section we describe and analyze how various aspects of the project were implemented and managed during Phase 3. We conclude the section with a brief discussion on the project's plans for Phase 4 as articulated by the project manager and director.

### Operational changes in Phase 3

Prior to the start of the second full school year for the LC project, a few changes were made in the structure and operations of the program that were designed to address some of the limitations and problems in the program that had been cited by participants and highlighted in the Phase 2 evaluation report. First, in order to scale up the LC implementation and develop the critical mass of users needed to foster an effective online learning community (something which had not happened during Phases 1 and 2), participation was opened up to all Junior level teachers in grades 4-6 in the nine participating school districts (although it was left to the discretion of the boards as to how many of their schools and teachers participated).

Second, the focus of the project shifted from trying to facilitate change following Michael Fullan's tri-level model (which seeks to infuse the innovation at the classroom, school administration, and board levels simultaneously) to focusing more directly on teachers, teaching, and learning at the classroom level. The tri-level approach had not proven successful, in part, according to the program managers, because the managers had not had direct access to the board superintendents and directors in the first year, but had had to "work through" the Student Achievement Officers (SAOs) from the Secretariat, for whom the LC program was but one of many responsibilities, one which they had very limited time to explain and promote to board administrators. As a result, said one manager, "I don't think the boards understand what we're trying to do." Consequently, this model of board interaction was changed in the second full school year of the project [Phase 2], with LC managers beginning to establish direct communications with board decision-makers, and starting to seek out their input into what LC resources and professional development initiatives would best serve the board's goals. However, to date, getting board officials to provide specific information on their professional development plans for literacy and numeracy has been largely unsuccessful. One LC manager was hopeful that a better understanding of LC by board administrators will lead to more support:

We're going to be able to say to them this is an opportunity for you to leverage some resources in a low-risk environment to see what has value for your school district, just like we did with ABEL in York Region.... When the school districts understand that it's a partnership, that this is something that they can shape to meet their own local needs, I'm hopeful that somebody in the school district will see this as a value, but it's the same old problem. It's complex. It's a new model of thinking and working.

The participation of the SAOs in LC in its first two phases had, in the view of the Secretariat officer responsible for overseeing the LC program, been less than ideal, “partly because [SAOs] are swamped and partly because we just haven’t seemed to be able to impress [it] on them.... Their first priority are the schools that are not performing well.... We would like them to get more involved [in LC].” The high turnover of SAOs caused by the secondment process used for filling SAO positions meant there was a yearly need to get new officers up to speed on the program. The Secretariat officer was hoping that next year there would be “at least some questions asked, at least some visits to the schools” by the SAOs responsible for each board participating in LC.

LC district leads for each of the participating districts had been appointed in Phase 2, but they had proved relatively ineffective in promoting project participation in the volunteer schools. This was addressed in Phase 3 by adopting a strategy for program infusion that had been successfully applied in the ABEL program: the use of volunteer “district champions” from each board, to provide vital board-wide leadership, inform teachers about LC and its potential benefits, facilitate their participation, and work with the project managers and facilitators to develop LC program plans in light of local district needs and identify and overcome challenges. The champions serve in various roles in their boards: lead teachers, curriculum consultants, IT managers, and principals are all represented. They were brought together in the fall of 2006 for a 2-day institute “to help them understand their role as district champions and how we could support them to bring more teachers in their school district into the program” [LC manager]. The institute focused on building local school district plans for implementation, and was considered by the managers to be very successful (although more so for the Anglophone than the Francophone participants). The champions participated in monthly teleconferences to develop plans with the managers, report on progress, and provide feedback on the program. Six of the nine champions proved to be valuable contributors to the project; one (a principal) had been less involved, and by the end of the year his school board had made the decision to withdraw from the project.

The three part-time LC program facilitators hired the previous summer were retained for the 06-07 school year. One was responsible for building up the Francophone literacy and numeracy resources, translating key documents, and providing online facilitation for the Francophone discussions and activities. The other two worked with the Anglophone teachers. One focused on literacy and the other on numeracy. Both sought out and developed learning resources and activities for the classroom as well as for professional development, and facilitated PD activities and discussions. But because teacher involvement in portal-based discussions and interactive PD activities of any type was relatively low in year two, the facilitators spent considerably more time finding and developing learning resources than facilitating online community discussions.

The lack of clarity about the status of project funding and the respective roles and responsibilities of the Secretariat and the LC management and staff that impeded project implementation during Phase 2 in 2005 had been resolved early in Phase 3. LC management and staff had assumed full responsibility for providing content for the LC program and portal, with the Secretariat taking on the role of “critical friend.” The LC

managers indicated that the working relationship with the Secretariat had “settled down” and that they had developed excellent communications with the Secretariat through their work with the Student Achievement Officer who had been given the responsibility in September 2006 for overseeing and liaising with LC. In the words of one LC manager,

[This SAO] is an advocate for LC, and any resources that come out of the Ministry we get them on the same day. Not that it was intentional but we kind of got the feeling that if we didn't ask the right question we weren't getting the information, but that's all gone away. We get information, she sends us information, and if there's something we need she makes sure that we've got it. And actually she's tried to, from that office, model the use of the technology. So she's wanted to use some of the videoconferencing and technologies.... She is not just saying do this because we think it's good for you, she is doing it herself.

For her part, the supervising SAO was intending that the SAO's responsible for the various participating boards ask questions of the boards about their LC involvement as well as make some visits to the schools where LC is being deployed. She thought the project was taking the right direction for advancing teacher professional development. “My personal impression is that it's the way to go and it's where we need to go, and it's forward thinking and a 21<sup>st</sup> century vision.” She thought the project would have made a better start if it had focused more sharply on selecting teachers for participation who were already leaders in technology use and eager to use it for professional growth and connecting with colleagues. In this regard, she cited the exceptional achievements of a teacher and champion in the Limestone board, who had made extensive use of LC and by his example had been able to inspire colleagues in his school to begin participating in LC. She was also aware of and pleased with the success of a LC book study (discussed below). She thought it encouraging that the York Region District School Board and a new Francophone board were joining the LC community next year, and was pleased to see the project recognized nationally by receiving an ORION Learning Award of Merit, given for “the achievements of faculty, students, and/or staff in promoting successful examples of collaborative teaching, learning and training”.

The supervising SAO felt that a top priority for the coming year should be to get the LC videoconferencing technology working more reliably:

I think that would be a really important thing because if people started using that and using it for PD among schools where schools could share, I think that that would be a big step forward. Because our focus is really job-embedded PD not bringing people out...

She expressed a commitment to the project, and was “sorry that it is taking so long” to advance, but recognized that “that often, that's the way” of such projects. She was impressed with the efforts of the LC management to move the project forward:

I really have totally enjoyed working with [the York University project team] and I think they are doing everything that they can. I think it was good that they made

contact with directors and people in boards. And I think that they're working with the Champions. And I think the Champions are doing things, so I think that that can only be good. And I know that [the project manager] has had the monthly teleconferences, which again is very good because it keeps people's mind on it. It's not too often that it's aggravating, but it's often enough that you don't totally forget that this is a project, you're supposed to be doing something in it.

### **The 2006 LC Summer Institute**

A second LC Summer Institute was held in early July of 2006 at the beginning of Phase 3. It included keynote speakers on topics in literacy and numeracy education, as well as sessions on the use of LC tools and resources. As in the previous year, a late start in seeking registrants and gaining school district commitments on participation meant that enrollment numbers (especially of teachers) were not as high as desired. Approximately 50 people attended, including a significant Francophone contingent, which had its own dedicated activity stream at the Institute. The feedback LC managers received from attendees was largely positive, and the managers considered it a strong success. However the early summer scheduling was problematic, both for attracting enrollment and for the time span it imposed between learning at the Institute and classroom application the following September. In the words of one manager:

People went away very excited, of course, and then the rest of July and all of August happens, and then they come back in September and they go "What did I do in July?" Anyway we put all the materials up so they had access to them and our data shows that there were lots of people accessing those resources to share.

### **Implementation of program components during Phase 3**

LC developed a range of resources and activities for professional development and classroom implementation that were made available to the LC community in the school year 2006-2007. (Specific details about the use of those activities and resources can be found in later in this report.) Here we discuss the implementation of these, the program managers' perspectives on the relative success of these implementations, and the nature of any obstacles encountered.

#### *Videoconferences*

The intent of LC was to have participants use videoconferences for three different activities: to hold individual informal conversations with a colleague to develop shared projects or reflect on aspects of teaching; to have more organized and planned meetings of groups with shared interests or pursuits, often in conjunction with participation in a LC professional development module such as a book study; and finally, as a tool for building class-to-class interactions and collaborations amongst students. Few instances of this last use developed in year two, and LC managers planned to push for more of this use next year as a way of expanding students' horizons about different regions and cultures in Ontario.

The majority of the larger videoconference events in Phase 3 had significant problems with broken or stuttering video and/or audio that often made them unworkable,

generating frustration in participants, and a subsequent resistance in some to participating in further videoconferences. There is little doubt that reliable videoconferencing presents the biggest technical challenge to the LC project's success, but despite their best efforts LC managers and technical support have found it difficult to address this issue. The boards' own networking architectures, firewall policies, and bandwidth limitations have been a major factor in generating these difficulties; many boards do not have the network resources in place to reliably support multi-party videoconferencing using Breeze (the software tool employed by LC). LC managers have no jurisdiction over the networking policies in the participating boards and must solicit the help of the board's IT departments to try and resolve issues, help which is not always easy to access.

Faced with this dilemma, the LC team does its best, conducting tests prior to events and working to resolve issues with different boards, even moving groups to other facilities in the board that should work better. But even when testing is successful events can still have major problems. For example, one manager described testing that was done with the Algoma board office prior to a book study videoconference. It was entirely successful with three or four participants involved, but when the actual event took place the following day it failed completely. One manager described the challenges encountered in videoconferencing:

The board will have their firewalls and we'll work our way in but then something there will change and then all of a sudden it doesn't work again so you got to go back into the district people and they're very reluctant to open things up because they're worried about somebody sneaking in and [messing] around. So even when you get it set up for this work there's no guarantee it's going to stay that way. Any time we try to run video conferences with five or six people it did not work well enough.

Breeze videoconferencing was also tried within the champions group but was also unsuccessful. "We ended up reverting to the telephone because we couldn't get everyone's connection working simultaneously," noted one manager.

Videoconferencing problems were not limited to the school boards; attempts to bring Secretariat staff into conferences also failed due to technical limitations in the Ministry.

### *Streamed media*

Several guest speakers, notables in either literacy or numeracy education, were recorded both at the Summer Institute and at other professional development events sponsored by LC. These ranged from Frank Serafini's reading comprehension session to a series of presentations led by Prof. Wayne Sproule on critical thinking, and Prof. Barry Scully's presentations of numeracy activities for the classroom. These events were captured and made available as streamed audiovisual media files, initially in Windows Media File format. An LC manager indicated that these had been viewed "quite a bit." One of the most frequently viewed streams, he indicated, had been a demonstration math class on the use of mind mapping in geometry taught by Dr. Barry Bennett. Due to board firewall restrictions, a few school districts were unable to access the streamed media files in their

original format, so the major ones have been converted into the readily-accessed Flash format (as will all future events recorded for streaming).

All of the streamed videos were embedded in larger professional development structures and resources that were intended to foster reflective discussion. For example, one video focusing on rich problem solving in mathematics was posted together with appropriate problems, and was intended to foster discussion in a moderated forum devoted to that video. Typically reading materials or references related to the video are also made available. However, few video viewers joined these discussions or accessed the ancillary resources.

All participating schools had been provided with a digital video camera in the summer of 2006, and teachers were invited to contribute exemplars of their literacy and numeracy teaching techniques to the portal, which the LC staff would then edit and post (thus relieving the teachers of the need to master video editing tools). But despite support and encouragement given by LC staff in both the Francophone and Anglophone LC communities, this invitation was not taken up by any teacher in the 2006-07 school year. (One school had done this in the prior year, but an LC manager noted that the lack of feedback from community members has disappointed the contributors.) Teachers in general appeared very reluctant to expose their teaching to others in this manner. LC management was enthusiastic about the potential of videotaping for helping teachers reflect on their pedagogy, and thought that they needed to do a better job breaking down teacher resistance by engaging them in more preparatory reading and discussion. “All we have to do is get a couple of breakthroughs and once we do it they will latch on to this,” said one manager.

### *Book studies*

Two book studies were initiated over the school year. One focused on the “Six Plus One Traits of Writing” approach, and incorporated videoconferences. Participants went through the book chapter by chapter, discussing it online, trying out some of its teaching and assessment strategies, and posting student writing for discussion. They agreed at the end of each biweekly session what they would do in preparation for the next one. Despite the substantial difficulties with videoconferencing participants encountered, on the basis of verbal feedback received from several of the “eight or nine” participants, managers considered the book study a success. It helped teachers move away from a primary focus on spelling and grammatical issues to examine the use of voice, writing depth, and other features of the writing. Two of the participants had told an LC manager that “they’d changed totally how they were going to teach about writing next year.” Another manager commented that:

At the end of the day almost every group except probably the Algoma group [the group which could not get the videoconferencing to work properly] was able to articulate that what they’d learned through the book study, and their reflections from it, had impacted their classroom practice. They shared samples [of writing] from each class. So to me that means we had some success. And if the technology had been a little bit more consistent it would have been a tremendous success.

While the Six Plus One book study was deeply embedded in classroom practice and directly addressed teacher needs, a second less successful one examining *The Teaching Gap* by Stiegler and Herbert was not. As one manager noted about the book, “it’s an interesting book, a lot of great ideas, but it’s not [at] the classroom level.” The *Teaching Gap* book study was more formal, and included specific assignments for participants developed by LC staff. Attrition was very high and it was eventually discontinued due to a lack of participation.

### *Other activities*

LC offered workshops over the year on the use of blogs that overviewed their pedagogical applications and provided an introduction to their operations. Several teachers decided to use blogs with their classes, however due to the nature of the blog accounts being set up independently of the LC portal it was difficult for teachers to visit the blogs of their colleagues to see what they were doing with their students.

Several numeracy activities and professional development resources were also made available over the course of the year to the Anglophone teachers. For example, the math facilitator developed several math activities based on Tinker Plots, and gave a demonstration that was streamed from the portal on using Tinker Plots as a strategy for a data wall.

The Francophone facilitator provided a range of resources and activities for use by Francophone teachers over the year, but despite what the managers indicated was the expenditure of a lot of time and resources to draw in the Francophone community, it was felt there had been little response from the Francophone boards. One manager noted that it never felt like these boards were “meeting us in the middle.” Partly this appeared to be because one of the Francophone boards was spearheading what was intended to be a cooperative effort amongst the Francophone districts to develop their own network and portal. The managers were planning to continue to support the Francophone participants as needed but to devote fewer resources to them in the coming year, partly due to the greatly reduced budget. One service that was being contemplated for the Francophone board Directors was a private shared page on the portal which they could use as a collaborative workspace.

### *Participation in the LC community*

In general, the forums for discussion about LC activities and resources, and numeracy and literacy teaching more generally, received little attention from LC members beyond a casual browsing. Usage statistics indicate that participants would read “starter” postings containing topical questions or issues for discussion that had been posted by LC managers or facilitators but typically would not respond to these. Given the low numbers of teachers in the LC community, the low response rates meant that more often than not, no substantive communal discourse would develop on a topic.

Nor were participation rates in other professional learning activities high for the most part. LC managers offered some possible explanations for why community involvement

was not as deep as had been hoped for. LC teachers' lack of prior contact with and knowledge about other community members was thought to inhibit teacher motivation to participate. Only a minority of the teachers had participated in a Summer Institute or workshop alongside teachers from other schools or districts, and few had been party to successful videoconference, so no solid social foundation for professional interaction had been developed that could help to overcome initial inhibitions about sharing and reflecting together. Where such social interaction occurred prior to or concurrent with attempts to develop meaningful dialog in LC online discussions, the results were more successful. In the Six Plus One book study, the regular use of videoconferencing meant that the participant group developed a collective social identity, and this led to a greater motivation to share, as others in the group were better known.

Another factor identified as contributing to the lack of participation was the low number of practicing teachers who were members of the LC community – typically the two leads from each of the seven participating Anglophone schools, for a total of 14 potential participants. The count was even lower for the three Francophone boards. In the words of one manager:

I just think we need more people. The statistics say that you get 2% of the people who are really eager in anything of this kind and we don't have enough people particularly at the teacher level. It didn't get rolled out enough in the sense of adding more teachers last year.

Based on communications with board administrators, this manager thought that part of the reason for the lack of expansion in year two had to do with the boards' focus on specific internal priorities, including in a few cases the establishment of internal networks and portals. To help tailor LC offerings to more closely meet district priorities, LC managers have begun to ask district administrators how LC can help them meet their priority needs going forward—"how it can fit in and support what it is that you want to do".

One of the managers expressed the perception that some teachers appeared to have overly optimistic expectations about what can be accomplished with very little time and effort. Teachers looking for things that can be used immediately and with little effort were likely going to be disappointed, since "we don't have much of that type of thing." The manager thought it was unrealistic for teachers to expect "to do something complex and intricate in terms of learning" without a significant personal investment. This manager suggested that teachers needed more established and regular opportunities for release time so that they could make the investments required for real change. Talking about the efficacy of the LC professional learning model, one LC leader noted that:

There are all kinds of people at the university levels or other levels that certainly understand that this is an effective way to deliver professional learning, but you have to have teachers who really say "Yeah, (1) I'm excited to learn and (2) I've got the time to learn." I can think of four or five people [in LC] who essentially are champions who are engaged in that kind of thing all the time and and love it.

The champions were seen by both managers as the most committed members of LC, and the participants with the most significant outcomes in terms of their professional growth. One manager reflected on her experience with this group over the year:

They all feel connected to each other and they feel committed to each other I would say when I listened to them, and the kinds of conversations they have with each other, the professional conversations they have with each other, it's not just the personal stuff.

However, the Champions had largely been unable to draw new, active participants into the LC community, or to increase the low levels of participation of members carried over from the first year. (There was one notable exception in the case of a school-based champion who was able to scale up participation in his school to include several other staff.) One manager indicated that they were “just now at the stage where we will start to build more capacity.”

### *The LC portal*

Extensive work had been done on the portal in the winter and early spring of 2005 to address prevalent criticisms of its rather intimidating complexity and the challenges it presented to quickly accessing desired information and resources. The portal's home page had been simplified through the introduction of tabbed subsections and a cleaner, less dense layout. But requests for further simplifications came from the champions and others in year two. Easier and more direct access to streamed media and other resources were set up, via links created in the home page's “dashboard.” And (as discussed above) customized portal pages were designed for three boards that requested this, to build up local activity participation. The overall goal for the portal interface, one manager said, was to “reduce the number of times you have to do something to get to where you want to go.”

The idea for the dashboard and a few other modifications that were implemented came from a manager's review of other portals that had been set up using the same commercial portal creation environment being used by LC. The LC project had no web designer on staff or contract, neither manager was experienced in doing portal design or layout, and the portal company's user support proved to be very weak in helping one of the managers redesign portal elements. By having the portal interface and functionality largely shaped by one technically adroit manager unsupported by any external user testing, that manager's preferences and assumptions about usability came to dominate the portal design process in a way that did not best serve the target community. “The decisions he makes are based on how he would use it as opposed to how someone else might use it” commented one observer.

There were constraints on the types of redesign that could be done to the portal that were imposed by the limited flexibility and extensibility of the commercial portal tool/environment being used by the project. For example, the tagging, indexing, and searching functions built into the environment were not well suited to the community's

needs. Community members could not reasonably be asked to provide more than a few simple tags when they uploaded resources, but as a result, tag-based search parameters were overly broad and resulted in a surfeit of hits, for which there was no ready fix short of hiring a librarian to index contributions more completely. Still, the manager responsible was relatively happy with the portal's level of functionality by the end of the 2006-07 school year, although he "certainly would like to see it look nicer". A few desired modifications could not be made as LC would have had to pay the hosting portal company a substantial amount to implement the changes.

Beyond the portal's design issues, what might be best termed its "externality" also presented an obstacle to its use. As one manager expressed it:

The challenge, of course, is that we are asking people to engage in a portal that's outside of their local context, so it's another place to go. It would be a lot easier if we could embed it in the login at [a teacher's] network account or it's on the teacher's dashboard or something and he would not have to actually remember to go there. And when people have already busy days within their own job responsibilities and their own local context we've been challenged to determine what's the best way to have this blend in.

The forum structure in the portal allowed for threaded discussions, but it was not an ideal medium for announcing or seeking out available partnering opportunities for collaborative cross-class teaching. To help address that limitation and to bring to the attention of community members upcoming events and new additions to the portal resources or tools, an automated notification system was added to the portal that notified members of additions to the calendar, activities sections, and resources by email. LC participants could customize their notification settings to focus on only those topics and areas of interest. Also in development is a notice board in the portal for those searching for or offering collaboration opportunities.

Managers thought that an adequate quantity of literacy and numeracy teaching resources were being made available through the portal, but cautioned that they were really not in the resource development business. As one put it, "we can't compete with classroom ready lessons or the multitude of sites for teacher resources." Their main thrust was to provide tools as resources, such as videoconferencing equipment, software, and expertise, as well as blogs and the discussion forums. Links to a number of strong external teaching resources were also provided, including links to the latest Ministry literacy and numeracy teaching resources and guides, and resources from the Secretariat. At present links have to be provided through PDF files on diverse topics created by the manager, as the portal does not support connection to an online database for resource material linkages, and this makes updating the lists more work than necessary

As was the case in year one, more resources continued to be made available in literacy than numeracy. The managers indicated that in part that was a consequence of the new media literacy documents that came out this year for the Junior division, in conjunction

with a new Ministry emphasis on media literacy education, which LC with its use of multimedia technology is well positioned to address.

#### **Goals and plans for Phase 4**

The LC management team saw the primary goal for the coming school year being to one of building up an effectively functioning learning community “where you have committed people who are willing and able to share and collaborate”. To accomplish this the managers feel it will be necessary in the view of management to (1) demonstrate to potential participants “the value of a resource that lies outside of the local context” through outreach and communication with stakeholders at all levels to provide them with a clearer understanding on the goals and strategies of the program, and (2) help teachers realize that LC can provide a safe community in which to collaboratively experiment with new resources, tools, and approaches. Further building of the program is planned, with an emphasis on increasing opportunities for teachers to work together in developing class-to-class teaching events supported by LC technologies, resources, and personnel. But reduced resources (the program will be operating with 2/3 less budget than in 2006-07) will heighten the challenges faced in working to achieve the program’s goals, especially in adding value to the LC program by finding and developing new resources such as guest speakers and book study curricula. The current primary program manager, who is retiring, has been working on a *de facto* full-time basis throughout the school year, but his replacement will be assuming a half-time position.

The 2007 Summer Institute will focus on building up the networked learning community, getting participants to make joint commitments to pursue different professional learning and teaching activities, and initiating a mechanism for reporting back and reflecting on the impact of these activities on the classroom. There will be less use of guest speakers and more emphasis placed on active participation in shared professional learning activities.

Further work will be done to coordinate with school board directors to better tailor LC to meet specific local needs, and help local districts develop their own internal networks and resources. Efforts will be made to get districts to commit to supporting staff engaging in LC-related professional development during the work day, perhaps by hiring a teacher for a family of schools who could substitute on a rotating basis, freeing teachers on a scheduled basis to participate in LC events or online activities.

A new focus on developing skills in and providing resources for implementing digital storytelling is planned for 2007-08, in conjunction with a newly-released Ministry document on requirements for digital literacy education. The numeracy program will be putting increasing emphasis on providing guidance and resources for mathematical inference development and problem-solving. New participants will be surveyed to determine how LC could help teachers meet their professional learning objectives, both personal ones and those required by district and provincial mandates.

A new Francophone board, as well as an additional large Anglophone board, will also be joining the LC community in the forthcoming year. In addition, a further scaling up is

planned within a few of the currently participating boards. Active talks are currently underway with these boards' administrators to elicit the participation of additional schools and teachers.

### III. Principals' Perceptions of Project

Four of the six principals of the Anglophone schools that had participated over the past two years of the LC program were interviewed in the late spring of 2007. (The other two principals had left their schools.) In addition, the principals of the two Francophone schools that continued their participation in Phase 3 were interviewed; both were in their first year as the school's principal and were new to LC. (The Francophone principals' experiences and outcomes are discussed separately at the end of this section.)<sup>1</sup>

#### Participation

The principals varied considerably in their degree of participation in LC professional development activities. One (Cam) had not participated in any at all. Two others had had limited participation. Wanda had participated in a videoconference in the fall of 2006 but could not remember the topic; Alice had undertaken the LC book study, but had not contributed to the related online discussion. Alice had also used the portal to view webcasts and articles, both for her own benefit and to select ones for her staff. The fourth principal, Jane, had attended the LC 2006 Summer Institute, and had organized videoconferences, but had not participated in them. She had also made use of the LC portal to determine what to direct her staff to look at, and to view webcasts, but felt she didn't have enough time to devote to it as a resource. However, she did feel that she had "taken a lot of things" from LC that had contributed to her professional growth around literacy and numeracy teaching and learning. Alice thought the program confirmed what she had already known about the processes of professional improvement, and valued being able to reach out and see what others were doing. Neither Wanda nor Cam had found that LC had contributed to their professional growth to date.

#### Leadership and facilitation

Of the four principals, Alice and Jane had provided the most leadership in LC utilization, selecting portal resources and recommending them to staff. Alice had also involved herself in an LC book study with her teachers. Jane had worked to organize videoconferences and had encouraged her staff to participate in LC events and use LC resources, monitoring the work of the school's LC lead (who was one of the most active teachers in the LC community) on a weekly basis.

Wanda's sole LC leadership role consisted of organizing lesson studies as part of the school's professional development process. The use of lesson study had been triggered the previous year, by a text on the use of lesson study for teacher professional development sent to her by LC. The lesson study process had started that year, and had involved only Junior division teachers; in 06/07 it was expanded to include teachers from all divisions, and focused on inferencing from text. Wanda was very enthusiastic about both the potential and the perceived benefits of the lesson study process, but found it a

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<sup>1</sup> Pseudonyms are used for the principals mentioned in this section.

challenge to manage the release time required. The lesson studies developed were internal to the school, and did not involve other LC members or facilitators.

All of the principals except Cam indicated that they had provided additional resources to facilitate teacher participation in LC over the 06/07 school year. They each noted the provision of release time additional to that funded by LC itself. Alice had bought books and other materials for Junior classrooms.

### **Perceptions of teacher participation**

Levels of teacher LC participation reported by principals varied considerably across the four schools. Cam did not think that any of his staff had participated over the school year. Wanda indicated that her math learning lead had attended a meeting with LC staff at another school in the board in the fall, but that there had been no other direct involvement with the program. Teachers at Jane's school had become frustrated with the repeated hardware and technical issues they had encountered trying to access the portal from school. Jane stated that they still try to access resources from home, but that there is less of a community of use developing in the school as a result of not having easy access in-school.

Teachers at Alice's school were reported to have made the most extensive use of LC tools and resources such as webcasts. Alice noted that she and Rob (a highly innovative numeracy lead teacher at the school who was also a district Numeracy Foundations trainer) were the first active participants, and that "now four more people are joining". She was pleased that the school's involvement started out on a small scale, as that allowed LC to build its credibility with her other staff so that they became more comfortable with it, and facilitating their expansion in the division.

### **Impact on the quality of teaching**

Here too perceptions of the principals varied. Perceived impact appeared to correlate with the degree of LC activity reported in the school. Wanda found it difficult to separate the effects of LC from those of other professional development initiatives undertaken by the lead teachers, and other board and Ministry programs that have come into the school in the past few years. Jane felt that LC participation had enhanced teacher competence in technology use, and had helped strengthen professional connections between teachers. It was seen as "one more reason to meet as a community." The principal who thought the evidence of improvement in teaching was most extensive was Alice, who pointed to the work of Rob, the teacher and champion who had spearheaded the introduction of the LC program into the school. He had "experimented and implemented so many things—media literacy, book study, which had changed his practice. He is showing other teachers what is technically possible." Not surprisingly, the lack of participation in LC by the teachers in Cam's school meant he had seen no impact of the program on teaching skill.

### **Perceived limitations of the LC program**

Four primary types of limitations or obstacles to use were seen by the principals to be reducing LC's impact: those associated with technical issues, those related to time management and priorities, those related to a lack of programmatic focus and

expectations for participants, and those related to the lack of learning community development and participation.

The technical issues cited included the need for more reliable and bug-free connections for videoconferencing, and difficulties accessing the portal and streamed media effectively from one of the schools. Technology frustrations brought Jane's teachers close to the point of dropping out of the program a few times. Cam noted that the portal was "extremely difficult to maneuver around" and that it was not user friendly. "So you have \$10,000 of equipment [from LC], but...if you don't make it easy to use at the front end you are going to lose everybody." (He was not sure if he or his teachers had used the portal since it had been reworked in the late winter of 2006.)

The pressure of other priorities together with a lack of available time was the most universally cited obstacle to greater participation. Alice noted that there many things on offer in LC, but time pressures limited opportunities for teachers to participate. Wanda considered lack of time to be the biggest obstacle to use: "Time to get on to the site and work through it, to read the things ...But to give [teachers] time you would have to take away something since for some teachers LC appears to be an add-on". Wanda did not see providing more funds for release time as being a wholly satisfactory resolution to this, as "teachers don't like being pulled out of their classes too much" and the school was already "so full of events that impact class time". Alice, by contrast, wanted more release time funding as she only gets \$1300 per year for the whole school from her board.

Cam thought that some of the activities that were part of the LC professional development program (such as book study) required too much commitment of time for most teachers to be willing to participate. He advocated the use of shorter modules presented on a just-in-time basis that was focused very specifically on helping teachers with one aspect of teaching or the curriculum: "So if you are doing grade 4 Medieval Times, the teacher can see how someone in Nipissing is teaching it and maybe share a guest speaker."

Cam strongly felt that even after two full years the program still lacked a sharp focus in terms of its directions and goals and that this did not encourage teacher participation:

You really need to pinpoint what it is you want to accomplish, set some reasonable goals...They have to get the teachers on board more, and say what do you guys want? I have the feeling that it is being run by folks that are not in the classroom.... This is about the students, it has to be practical and useful, then the teachers will buy into it. Otherwise people will stay disengaged. Why would I spend 2-3 hours a week on something I can't translate into my classroom immediately?

Two of the principals, Alice and Jane, expressed concern about the lack of community and sharing they perceived in the program. Alice commented on a feeling of being disconnected with those participating from other schools and thought distance was "still an issue." She would have liked to see principals sharing improvement plans and

connecting around this topic through webcasts. Jane found that teachers encountered difficulty in getting to know someone else to connect to, and felt there were not many teachers to connect with. The program had not spread across the board and was “stuck in the school.” The low number of teachers who had participated in the 2006 Summer Institute was seen as contributing to the problem of establishing a networked community.

One further limitation to the current LC implementation was raised. Alice thought that board and superintendent involvement was important for scaling up the program: “The superintendent needs to understand the program and be on board.” But she had not seen this happen in her board.

### **Overall value and continuing participation**

Three of the four principals thought that the program had provided sufficient benefits to their teachers to continue with it in the coming school year. One (Cam) would only do so if “big changes” of the type outlined above were made.

Wanda thought the program “worthwhile” but thought their use of it had not been optimal. For the next school year she was hoping to schedule regular release time for her Junior teachers to participate, either once a month or (more realistically) a few times a term. She wanted to see

[A] very structured facilitated discussion on what is applicable, what can we use and how do we use it, what is the research. It has to be formalized – it was not this year – there has to be an agenda, a purpose, it has to be meaningful, there have to be release times so teachers can organize their classrooms beforehand.

Jane had really valued the workshops LC ran in Toronto, which she termed “fantastic” and saw as the best part of the program. She planned to continue the school’s involvement and hoped they could get a better handle on the technical frustrations experienced this year. Alice was the most unreserved of all the principals in her enthusiasm for continuing with the project. She saw Rob, who had done what she considered outstanding work in delving into the program and bringing it to other teachers, as the “lynchpin” of the school’s expanded use plans, as “he is getting others excited” about it. “Having a staff member excited and knowledgeable about the project makes a big difference.” She saw staff participation this year as having been “phenomenal,” and indicated that visible products of the program were starting to show up. She had no reservations about continuing with LC next year: “I wouldn’t like to stop.”

### **Francophone principals**

One of the principals, Alain, had attended the LC Summer Institute; the other, Gerard, attended a Francophone LC meeting with the Francophone facilitator and the program manager in the fall, where he learned how to use the equipment for videoconferencing. Both had participated in videoconferences—Alain in one principal conference that had so many technical issues it was cancelled after 90 minutes; Gerard, in several videoconferences that were only partly successful due to poor attendance (in one

instance) and technical issues. The technical problems both encountered had to do with maintaining unbroken audio and sending and receiving video.

Alain attributed his staff's lack of participation in LC this year to two main causes. First, while there had been a coordinator/lead for the LC project at the school board the previous year, there was no one in that position in the current year, which he thought seriously impacted implementation; and second, he and his staff placed a higher priority on involving themselves in "numerous" professional development activities presented by the local school board (initiatives which had quickly showed very positive outcomes and so encouraged further participation). He also thought there had been a lack of specific information about the project, and that the technical challenges encountered inhibited later staff participation.

Gerard had been more active in utilizing LC. He had accessed some readings in the portal and all of the documents Rita had placed there; however, in terms of his own professional development from LC involvement, he commented that

In my case I think it would have been difficult to expect significant growth with respect to literacy and numeracy because I have strengths in both areas. I had worked in both areas as a Consultant and in the Ministry. I had received a lot of training in these areas and they are my strong points.

Gerard's staff had made use of the equipment (including computers and a digital camera) provided by LC in the previous year, but it was primarily repurposed to access and work with the board's own internal portal and the professional development initiatives related to it.

Despite the lack of participation by the staff at Gerard's school, he thought that the introduction of new technology that the LC project had brought about been helpful in improving the quality of numeracy and literacy teaching at all grade levels:

The LC project prompted a change of attitude towards technology in the school as a whole and a lot of motivation for using technology with students. One teacher who was interested in technology and Learning Connections spread that motivation I think....We had teachers at other levels who became very interested and who did wonderful projects with students.

He observed significant advances in students' use of technology as well, with students becoming "very skilled and independent" in using it. Teachers had expressed to him a desire to continue their involvement in the LC project despite their lack of utilization this year. Alain, on the other hand, did not want his staff to continue their association with LC due to the frustrations he had encountered.

Gerard pointed to several obstacles and limitations that constrained staff's willingness to get involved in LC activities. One of the teachers involved from the previous year had indicated that the project had been "somewhat forced on her." The technical problems

around the videoconference that was attempted in the fall (and in which several teachers participated) discouraged further efforts. There were also scheduling difficulties; as the various Francophone boards run on different schedules it was hard to find mutually agreeable times for synchronous events—these proved much easier to do within the local board. Conducting the Summer Institute during teacher vacation time was found to be a disincentive to attend. Constricting LC participation to junior division teachers prevented the involvement of a few staff who were interested but taught at other levels. But the main block to participation was the “competition” provided by the richer variety of Francophone teaching resources, curriculum activities, and professional development initiatives already available from the local board through their new portal. The board already provided teachers with release time and travel funds for professional development, collaborating with colleagues, and developing and conducting collaborative interclass projects.

## **IV. Champions' Perceptions of Project**

During phase 3, the project administrators created a team of champions from each school board. Their role was to be advocates of LC in their board. At the end of Phase 3 there were 15 champions who held positions such as school board director, program coordinator, consultant, district trainer, principal, or lead teacher. We asked this group to complete an online survey of seven open-ended questions about their involvement. Five responses were received which are summarized next.

### **Champions' role**

All respondents saw their role as one of promoting LC. The degree of their involvement in the project varied considerably and, to some extent, their role depended on their position at their board as evidenced from the comments of three champions: One champion not working in a classroom saw their role as only signing up teachers to the project. Another who was a board coordinator explained and demonstrated the project to other coordinators and frequently visited the LC portal and posted comments. And a third champion, a classroom teacher, developed projects in collaboration with another teacher in the same school that were posted in the portal.

### **Teacher engagement**

Champions were asked to describe the level of engagement in LC that they saw of other teachers in their board. One said that their board already had an online conferencing system in place with good resources, so by implication, there was little incentive for teachers to become involved in another online community. Three others observed little involvement on the part of teachers, one of whom thought that teachers simply did not have the time to commit to the project. A fifth champion reported that teachers in one school were successful in creating a book study project and made use of the discussion forums and Breeze videoconferencing system.

### **Value of monthly meetings**

The champions met monthly via teleconference, therefore we asked them to comment on the value of the meetings. All felt that they were very useful in maintaining contact with others and allowed for opportunities to clarify matters. One found that the meetings were a good motivator to keep moving forward with the project when they heard what other participants were doing. Another champion appreciated the chance the meetings provided to give input into the direction of the project.

### **Strengths of project**

Champions were asked about the strengths of the project's professional development activities and resources in improving literacy and numeracy teaching. Three of the five respondents specifically mentioned the value of the resources at the portal. The champion whose board had an existing online conferencing system valued the video resources in LC, but thought that they would be better utilized if links to them were available in their board's system because teachers are too busy to be bothered with signing up for another system. Another liked that teachers could go back and view the videos as often as they

liked. The two champions who did not mention resources said that they liked the ability to connect with other boards and experts.

### **Limitations of project**

In addition to being asked about project strengths, champions were asked to describe any limitations of the project. All comment focused on weaknesses of the portal: the time required to locate appropriate resources and the difficulty of navigating. One champion suggested that portions of the portal should be made available as an RSS feed to avoid having to login and check for new material.

### **Barriers to success**

We asked champions if they saw any obstacles within their boards to Learning Connections achieving its goals. One champion wanted to see Learning Connections resources integrated with their board's conferencing system. Another mentioned that there are too many competing resource sites such as OSAPAC and the Ontario Educational Resource Bank. Two champions mentioned some technical challenges of using Macintosh computers. The fifth champion felt that time for teachers to get together to share their growth and insights was a significant barrier.

### **Recommended improvements**

The final question asked if champions had suggestions on how the project could be improved. One champion suggested narrowing the focus and making it clear about whether LC is a resource bank or a communications venue. This individual also suggested making links on the portal more direct e.g., the blogging link on the home page should connect directly to the blog, not to a document about blogging. Another also reiterated the need to simplify the portal, and at the same time wondered if there was some way to encourage greater teacher participation. A third champion suggested that the project focus more narrowly on classroom teachers and champions rather than on trying to accommodate the needs of principals and superintendents. Lastly, one champion placed hope in the 2007 Summer Institute to provide more hands-on opportunity for teachers to work with tools and resources.

## V. Teachers' Perceptions of the Project

In fall 2005, shortly after Learning Connections began, we surveyed teachers on their literacy and numeracy classroom practices. Included in the survey were all Junior teachers in the schools participating in the project. Thirty-two teachers replied to the survey and we summarized their responses in the *Baseline and Startup Report 2006 Phase 2*. During April 2007, we asked the same teachers to reply to a slightly modified version of the survey. The purpose of the follow-up survey was to assess changes in practice over the intervening 18 months. Despite follow-up requests and an incentive of a gift certificate for the fifth and twentieth teacher to reply, only 10 Anglophone teachers completed the survey this time and no francophone teachers responded. Nevertheless, we believe that the responses from the 10 teachers provide a reasonable sample of the Anglophone teachers in participating schools because none of the teachers provided responses that deviated markedly from the group norm or from the initial survey.<sup>2</sup>

Both surveys contained questions dealing with the following topics:

- supports available in the project schools
- strategies teachers use in teaching and assessing literacy and numeracy
- teachers' attitudes towards ideas of best practice in literacy and numeracy

In this section, we first describe the current literacy and numeracy practices of Anglophone teachers who responded to the survey this year under these headings. Afterwards we examine reported changes in their practice since fall 2005. We must emphasize, however, that LC is one of many professional development initiatives taking place in districts. Therefore, attributing changes in teacher practice directly to LC cannot be done. The strongest conclusion that can be drawn is that LC was a contributing factor to teacher changes, but we are not able to say to what extent the project actually contributed to them.

### **School support**

#### *Professional development*

All teachers but two said that they had received either Ministry Foundations literacy or numeracy training or training for both areas. Seven teachers said their principal encourages them to participate in professional development activities by providing information on opportunities at staff meeting. Only three said financial support for workshops and conferences was provided by their principals.

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<sup>2</sup> Because of the length of the surveys the full results are not included in this report, but are available online. Fall 2005 results are at [http://www.yorku.ca/irlt/teacher\\_baseline\\_survey.pdf](http://www.yorku.ca/irlt/teacher_baseline_survey.pdf); spring 2007 results are at [http://www.yorku.ca/irlt/teacher\\_final\\_survey.pdf](http://www.yorku.ca/irlt/teacher_final_survey.pdf).

### *Manipulatives, tools, and media-Literacy*

All teachers reported that they had sufficient reading materials in classrooms and in the school library to support literacy instruction. Nine out of ten responded that they had enough teacher guides, computers, and resource books for teaching reading and writing. Resources that were lacking were games (2) and videos and DVDs (3). Only four teachers said that they had sufficient access to current professional journals.

### *Manipulatives, tools, and media-Numeracy*

All teachers (10 out of 10) reported that they had sufficient manipulatives for teaching numeracy, and most teachers (8) said that they had sufficient access to computers, teacher guides, and calculators. Two resource types found lacking were mathematics software and access to professional mathematics journals where only 3 and 2 teachers respectively said that they had sufficient access.

## **Teacher strategies**

### *Teaching and assessment strategies-Literacy*

Most teachers (5) reported spending 70-89 minutes daily on literacy activities. Three reported spending 50-69 minutes, while two spent 50-59 minutes daily. They used a wide variety of strategies for teaching reading. All teachers used either often or very often: modeled reading strategies, shared reading, guided reading, and independent reading. Less popular, but still quite prevalent, was novel study, balanced literacy, critical literacy, multicultural literacy, literacy circles, and story telling. Phonics instruction was used by 7 teachers at least occasionally.

With regard to writing, all teachers reported using the following strategies often or very often: looking at story elements, concept mapping, and process writing. Slightly less commonly used was spelling instruction, grammar study, dictionary skills, guided writing, creative writing, role playing, and word processing. Of interest was the discrepancy in use of journal writing: 6 teachers said they used it often or very often, while 4 said they used it never or almost never.

Teachers used an array of assessment methods. The following were used often or very often by a majority of teachers (at least 6 of the 10 teachers): questioning, observation, interviews/conferencing, students' worksheets, students' journals, and daily classroom work. Commonly used but less popular assessment methods were tests, quizzes, homework, benchmark books, portfolios, and running records.

### *Teaching and assessment strategies-Numeracy*

The most common amount of time spent daily teaching numeracy was 50-59 minutes (4 teachers). Three teachers reported spending 60-69 minutes daily, while 2 spent 70 or more minutes and one spent 40-49 minutes daily.

Teachers used a variety of strategies for numeracy instruction. The majority reported using the following strategies often or very often: think-pair-share, cooperative problem

solving, prompts, and open-ended questions. Less often used were math journals and logs, math word walls, and student presentations.

As for assessment practices, all teachers reported using observation often (5) or very often (5). Practices used by at least half of the teachers often or very often were: questioning, student worksheets, homework, daily work evaluation, quizzes, and tests. Of interest is that student journals, portfolios, interviews/conferencing were used for assessment only occasionally or never at all by 8, 9, and 7 teachers respectively.

### **Teacher attitudes**

The survey included a number of statements related to literacy and numeracy that teachers responded to using a 4 point Likert scale extending from “strongly disagree” to “strongly agree”. These statements were designed to examine teachers’ attitudes towards some of the ‘best practice’ ideas that underlie the Ontario curricula. In order to provide a summary overview of teachers’ responses, we classified them into three categories: statements to which 9 or 10 teachers agreed or strongly agreed; statements to which 9 or 10 teachers disagreed or strongly disagreed; and statements to which there was mixed opinion.

#### *Literacy statements to which 9 or 10 teachers agreed or strongly agreed*

- I usually structure reading and writing tasks to include a balance of guided and independent activities.
- I like to integrate literacy activities in other subject teaching.
- I often use materials from other cultures in my literacy instruction.
- I make it a habit to invite my students to include experiences from their daily lives into class literacy activities.
- Linking spoken, written and computer mediated forms of communication in the classroom is important.
- I teach students to question actively the texts they read in and out of school hours.
- I look for resources to use in class that appeal especially to boys’ interests.
- I encourage students to use multiple media to present their thinking.
- I like to incorporate project-based activities in my instruction.
- Pencil-and-paper tests are the most efficient way to assess students’ writing skills.
- All children in my room should believe that they can learn to express themselves successfully in a variety of situations.
- I feel it is important for reading materials to be intrinsically motivating

#### *Literacy statements to which 9 or 10 teachers disagreed or strongly disagreed*

- It is not very productive to have students work together in writing activities.
- Using computers to write distracts students from learning more academic literacy skills.
- Children need to learn how to edit constructively each other’s work.
- I think grade 4 to 6 is too early to incorporate critical literacy instruction.

#### *Literacy statements to which there were split opinions*

- I integrate diverse media into my reading and writing instruction.

- I am comfortable using computers in my literacy instruction.
- I like students to master traditional writing skills before we look at other types of text, such as email messages.

Overall, teachers' views tend to reflect the Ministry's position on teaching literacy as articulated in the *Report of the Expert Panel on Literacy* (Ontario Ministry of Education, 2004a) with perhaps two exceptions. One is the statement to which there is considerable disagreement on the need for students to learn to edit constructively each others' work. This strategy is considered to be part of a process writing approach where students are encouraged to confer with peers during the revision and editing stages (p. 86). The other exception is that some teachers are divergent on the value of using diverse media or email messages, whereby the *Expert Panel* encourages the study of text and multimedia of all types in the curriculum (p. 6). Finally, some cause for concern should be noted in that there is mixed confidence in the use of computers in literacy instruction as only 3 teachers strongly agreed that they were comfortable using them.

*Numeracy statements to which 9 or 10 teachers agreed or strongly agreed*

- I like to use math problems that can be solved in many different ways.
- I regularly have all my students work through real-life math problems that are of interest to them.
- When two students solve the same math problem correctly using two different strategies, I have them share the steps they went through with each other.
- I often learn from my students during math because my students come up with ingenious ways of solving problems that I have never thought of.
- Every child in my room should feel that mathematics is something he/she can do.
- I integrate math assessment into most math activities.
- In my classes, students learn math best when they can work together to discover mathematical ideas.
- I encourage students to use manipulatives to explain their mathematical ideas to other students.
- I teach students how to explain their mathematical ideas.

*Numeracy statements to which 9 or 10 teachers disagreed or strongly disagreed*

- It is not very productive for students to work together during math time.
- When students are working on math problems, I put more emphasis on getting the correct answer than on the process followed.
- A lot of things in math must simply be accepted as true and remembered.
- Using computers to solve math problems distracts students from learning basic mathematics skills.
- If students use calculators they won't master the basic math skills they need to know.

*Numeracy statements to which there were split opinions*

- I tend to integrate multiple strands of mathematics within a single unit.
- Creating rubrics for math is a worthwhile assessment strategy.

- In my class it is just as important for students to learn data management and probability as it is to learn multiplication facts.
- I don't necessarily answer students' math questions but rather let them puzzle things out for themselves.
- You have to study math for a long time before you see how useful it is.

Again, teachers' views reflected for the most part the Ministry's position on mathematics teaching as expressed in the *Report of the Expert Panel on Mathematics in Grades 4 to 6* (Ontario Ministry of Education, 2004b). Some divergence with the *Expert Panel* was evident on the items to which there were split opinions. The first item dealing with integrating multiple strands is regarded as desirable as students should be able make connections between concepts and see patterns throughout mathematics (p. 2). Rubrics are also seen as advantageous as they tend to be used to assess what students can do rather than what they can't do (p. 42). For the third item on which there was divergence, the Expert Panel encourages teachers to take a broader perspective on what mathematics is by including topics such as data management (p. 1). As for puzzling things out, the Expert Panel encourages students to persistent in problem solving as that is seen as a fundamental aspect of learning how to work mathematically (p. 14). Lastly, the Expert Panel suggests that students should be able to use mathematics now in their daily lives rather than it being an abstract subject that one day may be of use to them (p. 2).

### **Changes in teacher practice**

When we compared the survey responses of the 10 teachers in 2007 to their responses in 2005, we found statistically significant ( $p < .05$ ) differences on six survey items. Results are shown in Table 1 below. Caution must be used in generalizing from these results because of the small number of respondents. Changes occurred on two items related to mathematics. Teachers reported using students' journals *less often* for assessing mathematics. Also, they were *more in agreement* with using math problems that can be solved in many different ways in their teaching.

As for literacy practices, teachers reported using *less often*: phonics instruction and novel study. Used *more often* for assessment purposes were interviews/conferencing and benchmark books.

Table 1: Changes in teacher survey responses between 2006 and 2007 (n=10)

SURVEY ITEM	SCALE TYPE*	MEAN VALUE 2005	MEAN VALUE 2007	MEAN DIFFERENCE	T-TEST VALUE	PROBABILITY
How often do you use each of the following assessment methods to assess mathematics: Students' journals	frequency	2.30	1.70	-.60	2.714	.024
I like to use math problems that can be solved in many different ways.	agreement	3.10	3.70	.60	-2.714	.024
How often do you use each of the following practices to teach reading? Phonics instruction	frequency	2.60	1.90	-.70	4.583	.001
How often do you use each of the following practices to teach reading? Novel study	frequency	3.00	2.40	-.60	2.714	.024
How often do you use each of the following methods to assess reading? Interviews/conferencing	frequency	2.60	3.00	.40	-2.449	.037
How often do you use each of the following methods to assess reading? Benchmark books	frequency	1.70	2.10	.40	-2.449	.037

\**Agreement scale values*: very often/much of the time=4, often=3, occasionally=2, almost never/never=1. *Frequency scale values*: strongly agree=4, agree=3, disagree=2, strongly disagree=1.

## VI. Classroom Observations

During the spring of 2006, the evaluation team observed one numeracy and one literacy class in each of the nine participating schools. We returned to as many of the same classrooms as possible in spring 2007 to observe any changes in teaching practice that may have occurred in the meantime. In few cases, the original teachers were no longer at the school or on maternity leave so we did not observe the replacement teacher. Next we summarize our observations in the numeracy and literacy classrooms respectively.

### Numeracy classroom observations

Classroom visits to observe numeracy practices were conducted in one Francophone and five Anglophone schools. Mathematics lessons in three grade 4, one grade 5, and two grade 5/6 classes were observed and teachers were interviewed about the lessons. The teachers at the five Anglophone schools were the same teachers observed last year. The teacher at the Francophone school was not observed last year. Any comparisons in this section will be referenced to those who were observed both years, i.e., TY (two year) teachers. Their classes will be referred to as TY classes.

Class size ranged from 16 to 30 students (average: 24) and the length of time for the mathematics lesson varied from 50 to 95 minutes (average: 72). In all TY classes students were seated to permit collaborative work; in three, students sat in paired rows, in the others, students were in clusters (i.e., around tables or grouped desks). In the Francophone class, the teacher used paired rows, but also had some students seated in a semicircle. All TY teachers used the same seating both years; however, one teacher cut down the number of students per cluster from 4-8, to 2-6 – interesting because a group of 8 is too large for meaningful collaboration and this could indicate that the teacher has found smaller groups more effective.

As last year the classes were largely homogeneous in terms of language spoken at home; in four of the five Anglophone classes all students spoke English; in the remaining class, all students spoke English at home except for two who spoke an Aboriginal language at home. In the Francophone school 12 students spoke English at home, two spoke French at home and two spoke another language. (Note – this school was not the Francophone school mentioned in last year's report in which most students spoke English at home.)

All classes included both male and female students, but unlike last year, only three had a relatively balanced mix of girls and boys. The others were skewed in terms of gender, with 30%, 35%, and 73% boys, respectively.

The number of working computers in the classrooms ranged from one to five. In the TY classes the numbers for last year and this year are: 1,1; 1,1; 1,2 ; 3,3; 6,5, indicating a gain of one computer for one class but a loss of one for another, and in general, a very low number of computers. In one case, the only working computer in the classroom is now allocated for use by a special needs student. The Francophone class observed this year had five working computers; last year's teacher at the same school had four.

In several cases, teachers have been compensating for the serious lack of hardware by using their own laptops. The teacher whose one computer is allocated to the special needs student did a major literacy project using technology by allowing students to take turns on her laptop, and then borrowing an LCD projector for the presentation. There is a set of laptops in the school, but, as last year, these are reserved for grade 7 and 8 students. This teacher was very enthusiastic about the outcome of that project and would like to use technology more; she has not, however, moved to using technology in mathematics. In the class with two computers, the teacher has a digital projector and screen; thus the teacher's laptop is available for presentations, effectively providing the class with a third computer.

With regard to 'visible math', there were some changes. Professionally created charts/graphs, and posters with illustrations of mathematics concepts/procedures were noted in five classrooms (up from three last year). In addition a wider variety of manipulatives was stored in classrooms. All five classes had blocks and 3D shapes (up from 4 last year). Blocks, 3D shapes, counters, and pattern blocks were accessible to students in one classroom that had no manipulatives last year; and blocks, 3D shapes, geoboards, miras, and linking cubes were available in a classroom which last year had had only Cuisenaire rods. Since ensuring that students have easy access to a variety of manipulatives and tools is one indicator of best practice in mathematics education this is a positive sign.

Sadly, however, displays of *student* mathematical work were only evident in one TY classroom (down from two last year). And again this year a number line was displayed in only one classroom. In contrast, all these classrooms had a wide variety of resources for literacy – posters on elements such as paragraph/sentence structure, student assignments, word walls, the alphabet, displays of books, dictionaries, and a class 'library'.

### *Observation findings*

As last year, observers used a checklist that included statements about best practice designed around the ten dimensions of mathematics education: program scope, student tasks, discovery, the teacher's role, manipulatives, tools and media, student-student interactions, student assessment, teacher conceptions of mathematics, and student confidence. These dimensions are based on the work of Ross, McDougall, Hogaboam-Gray, and LeSage (2003).

A scale of 0 to 3 was used to rate the extent to which a particular statement described teacher practice in the observed lesson. (Scale: 0 = not applicable to observed class; 1 = minimal use: needs major increase; 2 = some use: needs some refining; 3 = optimal use: an excellent model for this aspect of teaching.) Beside the scale, observers could add comments.

The following is a summary of the results for each of the ten dimensions. The results are summarized and, for the TY classes, compared with the baseline observation data from 2006.

### *Program scope*

Best practice in mathematics education at the Junior level emphasizes teaching all five mathematics strands rather than focusing exclusively on number sense and numeration, and ensuring that all students receive instruction on all strands. The two checklist statements around program scope were:

PS1: The teacher made connections to other strands of mathematics. (i.e., geometry & spatial sense, number sense & numeration, measurement, probability & data management, patterning and algebra) or other subject areas

PS2. Struggling students were involved in the same interesting tasks as their peers.

For the TY teachers, there was stronger agreement this year for both statements. The average for PS1 increased from 1.6 to 2.2, and the average for PS2 increased from 2.8 to 3.0. (Note, that the overall average for the nine teachers last year was 1.6 and 2.6 respectively.) The overall average for TY Program Scope was 2.6, up from 2.2 last year.

The increase for PS1 suggests that TY teachers are making more connections - to other math and other subjects.

With regard to PS2, struggling students in the TY classes were doing the same tasks but with some accommodations; in one case struggling students used calculators and received extra guidance from the teacher, in another, there was a teacher aid, in all other cases, students worked within a group but the teacher provided individual support as needed.

Two TY teachers specifically mentioned connections to multiple intelligences (new this year). One noted that she tried to include visual, auditory, and kinesthetic opportunities in the observed lesson (an introduction to fractions). During the activity students became the “manipulatives,” and later wrote “answers in the air” so the teacher could check whether they were all correct. The other teacher commented “... what really surprised me was how well my lower kids got it. .... It goes to show the multiple intelligences, how some are so spatially aware.”

On Program Scope, the Francophone teacher received the same high scores on PS1 and PS2 as last year’s teacher, i.e., 3 and 3. In particular, this year’s teacher integrated science and mathematics, noting that “it’s in the curriculum.”

Several other comments from the pre- or post- interviews provide additional information to suggest that teachers are more aware of the importance of connections (i.e., there is a goal beyond the immediate topic for the day):

Without the understanding of fractions they won’t understand decimals.

It’s part of ongoing work in numeracy, working with patterns as preparation for algebra.

### *Student tasks*

The statements related to this dimension were:

- ST1. Tasks used contexts that were appropriate and interesting to the students.
- ST2. The problems used could be solved in different ways.

For the TY teachers the average for ST1 was 2.4 (up from 2.2) but for ST2 it was 2.6 (down from 2.8). The overall average for Student Tasks was the same both years at 2.5. At first glance, this is troubling; however, further analysis suggests that the lack of improvement is largely the result of observing only one lesson. One teacher was doing work on multiplication algorithms (which the observer classified as “drill”), and specifically on estimating to check solutions, but this lesson was placed near the end of a month long unit on multiplication – one in which students had learned various strategies for multiplying (e.g., compensation, halving, expanding). The teacher did a whole class review of the various strategies, but most of the time was devoted to individual practice, and students weren’t very enthusiastic, thus she scored 1 on ST1. In another class, the teacher was reviewing work on transformations, co-ordinate work, symmetry, and congruence using rotating math centers; although students were very enthusiastic about the activities (ST1: 3), most tasks were designed to prepare students for the upcoming test and allowed for a very limited range of approaches, i.e., they were not exploratory, (ST2:2). In a third class, the teacher was using an exploratory patterning unit. In many cases, the questions had no “context” aside from a mathematical one (ST2:2). Thus, the observed lessons didn’t always provide opportunities for teachers to demonstrate certain best practices to the fullest extent.

As in Program Scope, on Student Tasks, the Francophone teacher received the same high scores on ST1 and ST2 as last year’s teacher, i.e., 3 and 3.

### *Discovery*

The *Report of the Expert Panel on Mathematics in Ontario, Grades 4-6* strongly supports an investigative approach to mathematics learning and adds that “students will often learn more deeply if they experience moments of hard thinking, followed by the satisfaction of finding solutions to the problem” (p. 14). In the checklist, three statements were used to evaluate the extent to which teachers have adopted these ideas:

- DS1. The teacher asked probing questions that required deep student thinking.
- DS2. The teacher did not immediately indicate whether or not an answer was correct.
- DS3. The teacher provided significant time for student exploration.

For the TY teachers, the averages for these statements were 2.4, 2.8, and 2.6 respectively compared to 2, 2.4, and 3 last year. The overall average was 2.6, up slightly from 2.5 last year. As in the previous discussion, the type of lesson affected the scores, so that the teacher who was reviewing had a lower score on DS3 than last year (2 – down from 3), and the teacher who did the work on mathematics algorithms had lower scores on DS1 (2

– down from 3 last year) and DS3 (2 – down from 3 last year). However, two teachers improved their scores on both DS1 and DS2, one improved on DS1, and one improved on DS2. This represents solid progress in regard to asking and responding to questions, and suggests that teachers are aware of the importance of giving students opportunities to tackle difficult ideas on their own.

The Francophone teacher had scores of 3, 3, 3 compared to last year's teacher 3, 3, 2. This year's lesson involved small groups in exploring the speed of paper airplanes.

### *Teacher's role*

The new curriculum emphasizes the importance of building a mathematics learning environment that supports the development of understanding. One of the ways that teachers can do this is by having students explain what and how they know. In turn, teachers must have deep knowledge of fundamental mathematics in order to respond with understanding to unexpected student responses.

The statements regarding the teacher's role were:

TR1. The teacher regularly asked students to explain their mathematical ideas.

TR2. The teacher encouraged students to respond to or explain another student's point of view.

TR3. The teacher responded with understanding to unexpected responses.

The averages for these three statements decreased from 2.6, 1.2, and 1.6, respectively, to 2.4, 0.8, and 1.2. The overall average decreased from 1.8 last year to 1.5 this year.

On TR1, TY teachers scored 3, 3, 3, 3, and 1 last year. This year the scores were 3, 2, 3, 2, and 2 respectively, a slight decrease. The importance of having students explain has been communicated through Ministry of Education documents and training sessions, the reports of the Expert Panels, and textbooks. The scores show that teachers are aware of this aspect of their role, but that additional work is needed.

The results for TR2 and TR3 are particularly troubling. A partial explanation for the decrease is the large number of 0's – two for TR2 and 3 for TR3. With regard to TR3, observers assigned 0's when there weren't any unexpected responses. In particular, students working at paper and pencil tasks - estimating multiplication answers, looking for patterns, and reviewing transformations – might have written unexpected answers, but these would not be apparent to the observer. It is interesting to note that two teachers received a score of 3 for TR3; they were teaching fractions/proportions using different (and rather novel) approaches – students as manipulatives, and tangrams – but both had a whole class discussion in which students were invited to give a variety of responses. Such invitations increase the number of student contributions and thus the likelihood that there will be an unexpected response.

Beyond the problem of the 0's, the very low averages for TR2 in both years suggest that teachers are not yet comfortable with this technique. No TY teacher improved in regard to this statement, and no one received a 3. As with TR3, low scores could be related to the lack of full mathematical discussions in the observed lessons, although the Francophone teacher did use this technique to advantage as he moved from group to group.

The Francophone teacher had scores of 3, 3, 3 compared to last year's teacher who had scores of 3, 3, 3. The lesson involved groups working on speed. Students were in various parts of the school collecting data on duration and distance of their paper planes and working towards finding average flight speed. The teacher moved from group to group asking questions, having students explain their ideas to one another, and responding in a variety of ways to unexpected student responses.

#### *Manipulatives, tools and media*

Manipulatives are an important part of the mathematics program; when used appropriately they help students understand math concepts. In addition to blocks, shapes, and other concrete materials, calculators, software programs, and "virtual manipulatives" can be used. The Junior expert panel notes: "Exploring mathematics with technological applications should be an integral part of the Junior mathematics program" (Ontario Ministry of Education, 2004b, p. 28).

The statements related to this dimension were:

MT1. Students had easy access to a variety of mathematical tools, including technology.

MT2. Students used a variety of means (models, drawings, graphs, symbols, concrete materials, manipulatives etc) to represent mathematical ideas.

The averages for these two statements were: 2.2 and 2.6 for this year compared to 2.0 and 2.4 for last year. The overall average for the TY teachers was 2.4, up slightly from 2.2 last year.

In general, students have increased access to manipulatives (not technological); however, it isn't clear whether they can choose any manipulative they want except in one case, where the teacher says:

I usually try to use manipulatives, but this time they weren't used. Students have access to them and can use them if they want, but at this stage they prefer not to.

As noted last year, one interpretation of "variety" is the idea that individual students may choose whatever tool they think is appropriate for modeling the concept or solving the problem.

Several teachers explicitly mentioned a deliberate strategy with regard to manipulatives in their program:

With using manipulatives – we use them all the time.

We usually use manipulatives for a 15 minute block.

In general, however, there is a problem with access to technological tools. As noted earlier, most classrooms have too few working computers. In the class with three computers students did use math programs after completing their work, but in general, classroom computers are not used for math although teachers are reporting more use of computers in literacy. Only two observed classes had access to calculators – and in one class, it was only the struggling students who used them. The exception was the Francophone class where calculators were available for student use and whose teacher stated that students spend a third of the day using computers.

Although the TY teachers use a variety of tools (e.g., blocks, geoboards), there is less evidence about whether they use a variety of representations for a single mathematical idea (e.g., using a graph, diagram, and table to represent collected data). For example, the statement descriptor includes “concrete materials.” Blocks, counters, and tiles could be used to represent an idea in the same way. Alternatively, counters alone could be used to represent an idea in several ways. Because of this observation scores for MT2 could be artificially high. There were two instances in which teachers clearly were using multiple representations – at the start of the lesson on algorithms the teacher reviewed a variety of strategies for thinking about multiplication, including the use of arrays; in the introduction to fractions lesson the teacher used students themselves, as well as arrangements of concrete objects, and symbols.

The lack of improvement in the MT2 average is partially related to the lessons taught. In fact, two teachers’ scores increased (one from 1 to 2, and one from 2 to 3), but in the case of the lesson on multiplication algorithms and estimation, the teacher’s score fell from 3 to 2, because for the main part of the lesson students did not use different representations. It is possible that the issue is teacher knowledge rather than the topic (estimation in multiplying). For instance, the teacher clearly knows many ways of representing multiplication but wanted students to specifically use the traditional algorithm for this class; on the other hand, the teacher may have a much narrower view of estimation and failed to provide a variety of representation possibilities.

The Francophone teacher had scores of 3, and 3 respectively. Last year’s teacher had scores of 1, and 3. The students in this year’s class had access to tools and technology and the lesson required them to represent their mathematical data in a variety of ways.

#### *Student-student interactions*

Small group work in which students explore ideas together is a key idea in the new curriculum. In the checklist, observers were asked to rank the lesson in regard to the following statement:

S11. Students interacted with their peers about the mathematics.

The average ranking on this statement dropped to 2.4 from 2.6 last year. All teachers had arranged their classrooms so that students could interact with their peers in pairs or in larger clusters; however, the particular lesson dictated whether there was interaction. For instance, the algorithm lesson involved a whole class discussion and then individual work, so there was very little peer interaction.

In most cases student interaction was informal; that is, the tasks were essentially individual – calculating the proportion of the area taken by each tangram shape; working out the pattern for a given question; figuring out the symmetries in a picture – but students were allowed/encouraged to work together. This is a reflection of the fact that most observed activities were not exploratory in nature. Again, the exception was provided by the Francophone teacher (score: 3), who had students working in groups of three to calculate the duration and distance of flight for paper airplanes.

### *Assessment*

“Best practices” in assessment involve using a variety of strategies and incorporating assessment as an ongoing part of the learning process. Because there was only one opportunity to observe each class, it was not possible to report whether teachers used a variety of assessment strategies; thus, the following statement, which addresses the idea of ongoing assessment, was used.

AS1. During the lesson the teacher engaged in some form of assessment.

The average ranking on this statement was 2.0, down from 2.4. This is rather surprising, given the emphasis on assessment; however, there are some possible factors that could have affected the ranking. In particular, the observer may not know whether the teacher is engaged in assessment. For instance, all teachers used questioning of students and moved around to check students’ progress. Perhaps they were all conducting ongoing assessment of student understanding; however, unless the teacher took notes it was difficult for the observer to conclude that the teacher was using observation to evaluate learning. Most observers therefore gave a score of 2 if the teacher was observing students at work and actively questioning, unless the teacher explicitly conducted an assessment, in which case they were given 3.

Although it is not “during the lesson,” students in most classes were to hand in various pieces of work, e.g., the activity sheets from the transformation geometry centers, and a fraction worksheet. If we include these activities, the ranking for assessment would increase.

The Francophone teacher’s ranking on this dimension was 3, and last year’s teacher scored 3 as well. Students were expected to hand in a report on their work on speed. In addition, the teacher went around to the groups checking on progress and asking probing questions to assess students’ level of understanding.

### *Conceptions of mathematics*

The following statements were used to investigate teacher's conceptions of math as a discipline:

CM1. The teacher consistently modeled appropriate mathematical language.

CM2. The teacher went beyond rules to help students make sense of the math in a meaningful way.

The average ranking for the TY teachers for CM1 was 2.8, up from 2.6 for the same teachers last year; this indicates that the observed teachers had a strong commitment to using appropriate language. The Francophone teacher scored 3 as did last year's teacher.

On the second statement, CM2, which looks at a different aspect of this dimension, the average was very low – 1.6, compared to 2.4 for the same teachers last year. Again, two 0's impacted this average – in one class, students were reviewing material; in the other, students were working with manipulatives to uncover patterns.

The very low result on CM2 pulled the average for this dimension down to 2.2, from 2.5 last year. In light of the impact of the 0's it is difficult to interpret the overall average. If we turn to other evidence it appears that the decrease may not be significant.

For instance, no teachers prepared special lessons for the observation (last year two did), and most talked about their lessons as connected to a whole, explicitly talking about their approach. There were statements such as “we always start as a whole group and then move into either small group or partner and from that into independent”, “this was a typical introductory lesson – later we'll have more paper and pencil work”, and “you won't see the actual lesson – introduction of the concept – but rather, part of the ongoing work”. These comments indicate a broader conception of mathematics – one that assumes that teaching mathematics is not about “telling” students how to do particular steps, but about guiding them through various experiences over time.

On a slightly different note – during interviews, several teachers were quite specific about the mathematics and were tackling more complex ideas – this was in contrast to clear, but more general descriptions last year. See, for example, Table 2 below.

Table 2: Comparison of teacher tasks from 2006-2007

2007	2006
Students will create a large square with the tangram pieces and then figure out what proportion of the square (as a fraction) is created by each piece. I want kids to be able to demonstrate equivalency and be able to compare fractions with the same and different denominators.	We are going to use a combination of the Understanding Math program .... and the learning carpet as a way to get the kids to come up with their own strategies on how they might be able to solve estimation with regard to area of irregular shapes.
[It will be interesting to] see how kids strategize as they attempt to put the pieces in squares, and how they work out fractional areas.	It will be interesting to listen to their conversations, how they work together in a group...
Students will be working in centers doing translations, co-ordinates, symmetry, and congruency.	I'll have students create fraction strips ... taking 8 different strips – making whole, half, etc up to eighths.

There is also a clear sense that teachers are growing as reflective practitioners. Teachers noted theories of multiple intelligences, work on metacognition, changes to their programs to bring in technology, and commented on the progress of individual students and groups. Although many of the responses were related to literacy initiatives (there is clearly a need for more numeracy opportunities), teachers routinely mentioned the impact of Ministry documents and workshops, and the reports of the Expert panels. The Francophone teachers scored 3 on this dimension as did the teacher last year. He was quite eloquent about his overall plan for student learning in math, and the importance of integrating science and mathematics.

#### *Student confidence*

Confidence is a key component of student success. Teachers help students feel confident by connecting new mathematics to already-held ideas. The following two statements were used to collect information on this dimension:

SC1. Students showed engagement/enthusiasm.

SC2. The teacher made deliberate connections to prior knowledge.

Averages for the TY teachers decreased from 2.8 and 2.4 respectively, last year, to 2.6 and 2.2 this year. The overall average for the dimension dropped from 2.6 to 2.4.

In the case of SC1, a clear factor was the lack of student enthusiasm for the multiplication algorithm lesson (score: 1). On the other hand, one teacher raised her score from 2 last year to 3 this year. Thus four of the five teachers scored 3 on SC1 – an indication that teachers are using lessons that engage students in doing mathematics.

With regard to SC2, two scores went up and three went down resulting in 3, 2, 2, 2, 2. It is possible that the observers missed instances in which teachers made connections to

prior learning. Or, since lessons seem to be more embedded in a broader unit it could be that the teachers had made connections in previous weeks.

The moderate level for this statement indicates that some teachers are not making explicit connections to prior knowledge, whether this is concepts learned in earlier grades or ideas connected to familiar contexts. Given the importance of prior knowledge in building mathematical understanding, this is of some concern.

The Francophone teacher scored 3 on this dimension as did the teacher last year. As noted earlier, the activity was very engaging for students and the teacher ensured that connections to prior learning (in this case, work done in November) were made.

*Summary of numeracy observations*

Taking an average of the rankings across each dimension, the results for the TY teachers for the two years are as shown in Table 3.

Table 3: Averages of TY teachers’ rankings for 2006 and 2007.

<b>DIMENSION</b>	<b>2006</b>	<b>2007</b>
Program Scope	2.2	2.6
Student Tasks	2.5	2.5
Discovery	2.5	2.6
Teacher Role	1.8	1.5
Manipulatives, tools and media	2.2	2.4
Peer Interactions	2.6	2.4
Assessment	2.4	2.0
Conception of mathematics	2.5	2.2
Student Confidence	2.6	2.4

Although there are differences with regard to statements within each dimension, these numbers suggest that teachers are strongest in program scope, use of open tasks, and emphasis on discovery. They are moderately strong in having students work together to explore ideas, in building student confidence, and in using a variety of manipulatives and tools. The average score on teacher conceptions of the discipline has dropped, however, as noted earlier, there is some additional evidence that there is actually growth in this area.

While it isn’t clear why assessment scores have dropped it could be related to the lessons taught – or to difficulties of interpreting whether a particular teacher action is “assessment.”

Areas of concern are mainly related to the teacher role. In particular, although all observed teachers have students explain their reasoning, few have them communicate their understanding to one another, and while it is difficult to interpret the scores for TR3,

it is possible that lack of mathematical discussions is preventing growth in the Teacher Role dimension.

Total scores for the TY teachers ranged from 33 to 49 out of a possible 54; last year the same teachers ranged between 28 and 49. The Francophone teacher this year scored a perfect 54, while last year's teacher from that school scored 51. Last year observers' comments confirmed that those who scored below 30 were weak in many areas; those between 40 and 49 were moderately strong; and that the teachers who scored 50 or over were highly competent. The situation this year is somewhat more difficult to analyze because the teacher who taught the multiplication algorithm lesson dropped from 49 last year to 36 this year; this clearly indicates that the observation rubric poses difficulties when used on a single lesson that is not inquiry-based.

### **Observed numeracy teachers' comments on project**

We asked the teachers that we observed for any comments that they might have on the LC program—their overall impressions and suggestions for the managers. These are summarized below. We found heard positive comments; the few negative comments mostly revolved around the portal (still too difficult to navigate), the webcasts (too long), and collaboration (not enough). Comments about the technology were positive and negative. There is clearly a need for teachers to have additional help in this area. Suggestions for improvement included providing more interaction, and giving teachers more specific instructions about what they are to do. Of note is no teacher mentioned anything about the LC numeracy initiatives (two literacy initiatives - the Book study and the Reading workshop were mentioned).

#### *Positive responses*

##### *General*

- Glad they'll continue with the program for the 3<sup>rd</sup> year.
- Overall, a great experience, challenged her and made her expand in new directions.
- Second year made a big difference - in the summer institute made more connections with teachers.
- Likes talking to other teachers, finding out what works, what they are using - likes the connecting part about the LC.
- Feels so privileged to be able to call and talk to the Ministry people.

##### *The portal*

- Now the portal is user-friendly, and it made a big difference
- This year finally felt comfortable enough with it to present it to the staff – after the presentation 5 teachers wanted an account -- next year will start promoting the program at the board level
- Links are useful
- Tries different things from the LC portal.

##### *Literacy*

- The book study was useful.

- With the book study – technology failed, but the people made it happen. There is more to this collaboration than technology.
- Reading workshop was useful, especially after Tania gave them a guided tour – it made a big difference.

*Negative responses:*

*Portal*

- This year the portal is more accessible, but still its structure is somewhat obscure.
- Has a hard time finding her way in the portal; hard time logging in
- When she gets email notification of new things in the portal, she can't access them directly though clicking on a link in the email, but has to look for them in the portal
- Never contributes – the discussion either doesn't apply to her experiences, or she doesn't know what other people have done.

*Collaboration*

- LC isn't giving teachers enough time to collaborate.
- Collaborating is hard – she doesn't know people – the teacher in her area is not very active.
- She would like to get together with people once per term.

*Webcasts*

- Doesn't watch as many webcasts – time-consuming
- The few times she wanted to watch the video streams they cut out. This was a problem because her kids were with a supply teacher so it was wasted time.
- Some of the videos are very long, I looked at one on math – teaching fractions with a game, but I don't always have the time to sit that long.

*Technology*

- There is no help with the technical aspects, e.g., downloading, video streams
- There's always the technical aspect which is a problem, but that's secondary now: takes time to gain momentum.
- It takes time to solve technological problems, so he learned to deal with it and be patient.
- Uses the laptop at home.

*Other comments*

- LC made it really easy to use blogs – this was from a teacher who uses technology a lot (e.g., Breeze, blogs).
- It's a nice resource, but it hasn't been as interactive as it could be. There are a lot of sites with links, but what they need is a site for interaction.
- “I did go onto the blogs and the site at that start of the year and went to the workshops session in the hopes of getting clarification as to where they saw the project going. Honestly I wasn't sure they knew where they wanted it to go which was a bit frustrating because I thought I was not getting a clear picture of what the project was being so I wasn't getting a clear picture of what my role was, my

responsibilities were supposed to be. I am all for PD, been involved in the new mentoring process, but this year has been bad. I needed more guidance as to what was wanted from teachers. I would get two different responses when I asked questions of different LC folks.... Clarify objectives, send out specifics about what they would like me to do – e.g. we would like to see you do a lesson on X, or your feedback on Y, any kind of direction.”

### **Literacy observations**

We observed seven literacy classes: three grade 4, three grade 5, and one grade 6. The class sizes ranged from 14 to 39 (in the latter case, two classes were brought together for EQAO preparation), with the average size of 25. The classes were generally allocated a large block of time as part of balanced instruction: three of the observed classes lasted 60 minutes (one of which would have been 90 minutes if not for an administrative assembly), one class took 75 minutes, and four classes were allocated 90 minutes. Classes included a variety of seating arrangements, including paired and multiple rows, clusters of seats, and seating arranged in semi-circles.

All classes included both male and female students, and had a relatively balanced mix of girls and boys in all classes except for one with 73% boys. All classes in Anglophone schools had students who spoke English as their first language, at the exception of one school where two or three children spoke an Aboriginal language at home. In one of the Francophone schools there was an equal mix of students speaking English and French at home. In the other school 57% spoke English at home, 21% spoke French, and the remaining 22% spoke languages other than English or French, including Arabic, Moroccan, and Chinese.

The number of working computers in the classroom ranged from zero to five: 0 computers in one classroom, 1 computer in two classrooms, 2 computers in two classrooms, 3 computers in one classroom, and 5 computers in one classroom. In one of those two classrooms with 2 computers, one computer was the teacher’s laptop and another computer was allocated for use with the special needs student. Only one classroom had five working computers. Other technology included a stereo, an overhead projector, a printer, a TV, and voice amplifiers.

A variety of resources were displayed in the classrooms, including rules relevant to literacy (all 7 classrooms); students’ art work with captions (5 classrooms) and without captions (1 classroom); word wall (5 classrooms); alphabet (5 classrooms); and pictures (5 classrooms). Three classrooms displayed a variety of students’ literacy assignments with teacher’s comments. Other displayed material included rules of behaviour, writing charts, and posters to support writing. Most classrooms also had displayed books (7 classrooms) and dictionaries (5 classrooms).

The following is a summary of the results for each of the nine dimensions of literacy instruction. The results are summarized and compared with the baseline observation data from 2006.

### *Program scope*

Three specific observations were made in this category, based on the following statements:

L1: The teacher taps a variety of literacy modes: reading, writing, listening, speaking, viewing, and representing.

L2: The teacher makes cross-curricular links.

L3: Modifications are made for non-native speakers and those with special needs.

Teachers' understanding of literacy as multimodal should include six fundamental aspects: reading, writing, listening, speaking, viewing, and representing. In this category scores were high, with six teachers scoring level 3 and one teacher scoring level 2. These results are consistent with the baseline observations. Since the baseline data provides such a high score, it can be speculated that teachers' understanding of literacy has reached its ceiling.

Literacy is intrinsically linked with other curricular areas and facilitates engagement with different kinds of text and media. With regard to making cross-curricular links the scores varied from 0 to 3, with most teachers scoring 2. Teachers were observed making connection to social studies (in 3 classes), geography (1 class), math (1 class), and animal science (in 1 class). Teachers' commitment to making cross-curricular links shows no significant improvement from the baseline data.

Teachers in the observed classrooms made more accommodations to students with special needs and students with first languages other than English or French. Whereas baseline data shows that last year over 50% of the teachers made no accommodations to students, this year only one teacher felt that that was not applicable in their practice. The remaining six teachers made significantly more accommodations to students with disabilities and students requiring second-language assistance (two teachers rated at level 2, and four teachers at level 3). The accommodations took the form of pull-out work with an assistant, modifying teaching practices to meet the needs of diverse students, as well as providing support to struggling students in the form of additional time for exploration, teacher's individual assistance, and optional work with partners. This year's data show that teachers have grown in their understanding of diversity and aim at providing accommodations to different types of learners.

### *Student tasks*

The statement related to this dimension focused on gender and literacy:

L4. Gender-sensitive practices and activities are included.

Teachers showed a varied degree of gender-sensitive literacy practices. Four teachers showed no such practices, one teacher was rated at level 1, and two teachers were rated at level 2. Compared to the baseline observation data, the gap between teachers who incorporate gender-sensitive practices and teachers who do not has grown. More teachers this year show no such practices, but the number of teachers demonstrating a moderate

use of such practices has also increased. Successful examples of gender-sensitive practices include the use of *Sisters Grimm* to introduce a unit on fairy tales, and a use of movie posters geared towards male and female audience which is part of talking about media literacy and gender bias. No teacher demonstrated the optimal use (*i.e.*, level 3) of literacy practices geared specifically towards boys or girls. Although these results show no significant improvement from the baseline data, there is a growing awareness of gender-sensitive practices among teachers in connection with the new media literacy curriculum. In addition to the teachers observed for their literacy teaching, a teacher who was observed for math included a media literacy component in his lesson, and discussed gendered images in connection with sports.

### *Discovery*

Literacy is understood as a recursive process involving planning, brainstorming, writing, and editing. In this dimension we look at process orientation towards literacy instruction, involving teacher and peer feedback:

L5. The teacher uses a recursive approach that reinforces literacy as process rather than product.

The results are largely positive: only one teacher scored 1, one other –2, another - 2.5, and the rest scored 3. This shows that teachers maintain a deep understanding of literacy as a process and demonstrate it in their teaching. A particularly encouraging example comes from a class where during the test preparation the teacher brought in a live dog to serve as a subject for a descriptive writing. This teacher demonstrated an understanding of literacy as a recursive and iterative process.

### *Teacher's role*

This dimension focuses on the teacher's role in promoting academic and social literacies. According to *Literacy for Learning – The Report of the Expert Panel on Literacy in Grades 4 to 6 in Ontario* (Ontario Ministry of Education, 2004a), it is important to link the students' understanding of social communication in life to school literacies.

The following dimension was evaluated:

L6. The teacher links literacies in and out of school.

Observation showed relatively high results, with only one teacher rated at level 0, one rated at level 1, three observe at level 2, and two – at level 3. Overall, we see a minor increase in teachers making connection to out-of-school literacies. Examples include a pen-pal project in which students are encouraged to do oral presentations based on their life out-of-school, and a discussion of responsibilities involved in owning a pet in connection with descriptive writing about a dog.

### *Media and tools*

This category focuses on different media and tools used in literacy instruction. Literacy in the 21<sup>st</sup> century has gone beyond pen and paper and includes a variety of modes and

media that students need to be conversant in. The *Expert Panel on Literacy* stresses the importance of technology and media for literacy instruction.

Teachers were assessed on two dimensions:

L7. The teacher uses digital media in the lesson.

L8. Students make use of technological tools for literacy practices.

Teachers demonstrated a varied degree of digital media use in the lesson, ranging from no use (four teachers), to limited (one teacher) and moderate use (one teacher) to optimal use (one teacher). Students made a wider use of digital technology: two classes showed no use (level 0), one class showed limited use (level 1), two classes had moderate use (level 2), and two classes had optimal use of technology (level 3). One teacher who did not use technology made reference to other classes where students have used technology. Overall, these observations show an improvement from baseline observations, where no teacher demonstrated optimal use of digital technologies, and only one class demonstrated moderate student use of technology. This year's findings are encouraging and demonstrate that teachers are taking ownership of technology, and are willing to release control over the technology to students. In one class the teacher set up the laptop for the students to present their highly creative PowerPoint presentations. An exemplary use of digital technology for literacy comes from a pen-pal project initiated by two LC teachers. The observed teacher made use of the computer lab and organized a video conference with a class at a different school board. Not only did the teacher allow students to use technology for literacy practices, the teacher also gave students an opportunity to be in control of the technology, managing it, and trouble-shooting where possible.

#### *Student-student interaction*

Interaction with peers is essential in literacy instruction. Teachers are encouraged to move away from traditional teacher-centered practices to student-centered practices where students are given meaningful opportunities to interact with each other in oral, written, and digital modes.

Teachers were observed on the following dimension:

L9. Topical peer interaction is encouraged.

Student-student interaction was encouraged in all classrooms. In four classes teachers encouraged moderate student interaction (level 2), and in three classes peer interaction was at an optimal level (level 3). Baseline data suggests that teachers offered mostly limited to moderate opportunities for student interaction. A comparison with this year's observations shows a trend toward increasing peer interaction opportunities in the classroom. In one classroom these opportunities were realized through students working in groups in the classroom, and communicating via video conferencing with students across the province. This observation suggests that teachers are starting to realize the potential of technology for encouraging student interaction.

### *Assessment*

This dimension focused on assessment practices that teachers use in literacy. Assessment should include a variety of strategies and be ongoing in order to capture the multidimensional and complex nature of literacy development. Our observations focused around the following statement:

**L10.** Appropriate assessment is built into the lesson.

The results were consistent on this dimension, with only one teacher showing no signs of ongoing assessment (level 0), four providing moderate ongoing assessment (level 2), and two showing optimal use of ongoing assessment strategies (level 3). This is an improvement compared to the baseline data where more teachers showed no or limited signs of ongoing assessment. This area still needs slight improvement in teachers' practices.

Another observation focused on student confidence in relation to assessment and feedback:

**L11.** The teacher provides specific feedback of a positive nature: any corrective feedback is constructive and specific.

Results on this dimension were consistently high, with three teachers scoring 2 and four teachers scoring 3. These results are consistent with the baseline data and confirm that teachers incorporate positive feedback into their literacy instruction.

### *Teacher's conception of literacy*

Students today are becoming increasingly more exposed to different digital communication technologies. These technologies require skills of critical reading, writing, and searching for information. Teachers' understanding of a broader conception of literacy that incorporates these skills is crucial to how they teach literacy and to what kinds of literacy students will master.

Observations focused on the following statement:

**L12.** The teacher fosters the development of critical, variously situated literacies.

The results were spread out, with one teacher showing no focus on critical literacy (level 0), one teacher showing minimal understanding of literacy as critical (level 1), and one teacher demonstrating optimal practices of critical literacy development (level 3). The majority of teachers scored 2, which shows that critical literacy practices were present, but need more work. These results are consistent with the baseline data, and show that although the focus on critical literacies is present in most classrooms, it needs improvement.

### *Student confidence*

The last dimension focused on confidence – an essential component in successful literacy instruction. In order to become productive citizens students need to be encouraged to develop their own voice and successfully articulate their point of view.

This dimension focused on the following observation:

L13. The teacher validates learners' individual identities, and encourages them to develop their own voice.

There was an overwhelmingly positive response on this dimension, with all teachers demonstrating optimal practices with regard to validating students' identities (level 3). This is an improvement from baseline data, where only over half the teachers were rated at level 3 on this dimension.

### *Summary*

In summary, areas that have improved compared to the baseline observation data from 2006 are:

- Making accommodations for students with special needs and speakers of languages other than English (Anglophone schools) or French (Francophone schools) (L3 program scope)
- Teacher use of digital media (L7 media and tools)
- Student use of digital media (L8 media and tools)
- Topical peer interaction (L9 student-student interaction)
- Providing ongoing assessment (L10 student assessment)
- Validating students' individual identities and encouraging the development of their own voice (L13 student confidence).
- 

Areas that remained consistently positive are:

- Teachers' understanding of literacy as multimodal (L1 program scope)
- Making cross-curricular connections (L2 program scope)
- Recursive approach to literacy: literacy as process, not product (L5 discovery)
- Linking literacies in and out of school (L6 teacher's role)
- Positive and constructive feedback (L11 student assessment and confidence)
- Focus on critical, variously situated literacies.

Areas of concern that require attention are:

- Incorporating gender-sensitive practices. (L4 student tasks)

Areas that need improvement are:

- Providing ongoing assessment (L10 student assessment)

Compared to last year's observations, two of the three areas we found needing significant improvement – media and technology use and making accommodations for students – have significantly improved. Teachers demonstrated that their practices had changed to accommodate diverse learners, and they are becoming increasingly savvy with the digital technologies, encouraging technology use in their students.

As noted above, one area that still needs more work is incorporating gender-sensitive practices into literacy teaching. Although there is a sign of improvement with regard to gender-sensitive practices, it still needs more work, especially in classrooms which consistently show no such focus.

Last year's observations found that teachers sought their inspiration in face-to-face workshops organized by the board. This year's observations suggest that teachers make increasingly more use of LC resources provided online, such as media literacy workshop, and the 6+1 writing traits workshop that was organized through the project. In pre- and post-observation interviews not only literacy teachers, but also numeracy teachers made multiple references to the use of the Learning Connections portal for their literacy instruction.

### **Observed literacy teachers' comments on project**

Below is the summary of literacy teachers' comments about the LC project. The comments range from negative to highly positive, showing that teachers have adopted the project to varying degrees. Negative comments revolve mainly around the lack of time on the teachers' part, lack of clarity and direction in the project, and occasional glitches with the portal. Positive comments include participation in different professional development activities organized through the portal, resources and materials posted on the portal, and increased opportunities for teacher and student collaboration.

Important to note is that three teachers commented on their lack of LC portal use. Despite the fact that the project is going into its third year, some teachers are still completely or partly uninvolved, or are withdrawing. Below is the summary of positive and negative feedback which sheds light on patterns of their participation.

### *Positive responses*

#### *Materials and resources*

Teachers commented on the amount of useful materials and resources that they incorporated into literacy teaching. Materials included the eLearning workshop, a number of new resources on media literacy, and the First Steps Writing program. Assistance from the portal moderator on using the eLearning workshop is also worthy of note. A workshop that two teachers mentioned was Six plus one Writing Traits. The teachers involved in it commented on its efficiency.

#### *Community*

One teacher mentioned the importance of being part of a professional community of like-minded people. The project helped the teacher find a partner for various projects.

#### *Student collaboration*

This year two teachers started class-to-class collaboration, which involves sharing of oral presentations through Breeze videoconferencing, and is projected to extend through blogging.

### *Negative responses*

#### *Lack of time*

Many teachers commented on their lack of time to participate in the portal. One teacher commented: "Time is an obstacle. When during the day do we do this?" Another teacher admitted that lack of time is the reason for her lack of participation in the portal. Teachers also recognized that they are feeling overwhelmed, with the project just adding one more thing for them to juggle into their week.

#### *Lack of direction/understanding of the project*

Several comments pointed to the fact that the project lacks direction, and teachers indicated a lack of understanding about the project's aims and goals. One teacher commented that she was excited at first, but then "found the direction of where they wanted us to go was not very clear." Another teacher said "They did not make it clear what the expectations were. I saw the big picture but the specifics of what we need you to do and this is what we expect of you and here is what we want to see as an outcome – that all got muddled."

#### *Management at the board level*

Several teachers reported problems at the board level which limited their participation. One teacher reported that they used to have a person at the board level who was overseeing the project, but now there is nobody. Another teacher commented that there is confusion at the board level, and different people have different responsibilities with regard to Learning Connections.

#### *Portal problems and online nature of collaboration*

Teachers are still finding the portal to be cumbersome and frustrating. One teacher believes the portal to be a major glitch. Another teacher commented that the portal is too

confusing, to the point of the teacher getting frustrating and not participating in the portal activities.

The online nature of collaboration was also an obstacle for two teachers. One teacher commented that she “found having to do everything online extremely frustrating”. Another teacher admitted to not being an online person, and preferring to do things face-to-face.

Several isolated comments were also made, one teacher commenting on the material on the portal being irrelevant to her, and a lack of material in French. Another teacher felt that Learning Connections was not appropriate for grade 4 as students at that level were simply too young. Another teacher commented on feeling isolated, being too far away from all other schools.

### *Suggestions*

Teachers made several suggestions on how the program could be improved.

- One teacher commented at length about how she felt the connections should be made at the local level rather than the provincial level. She felt that it is more useful to make connections with teachers in their own board, in their local community, since the issues and problems they are dealing with might be similar, as well as the requirements for literacy instruction.
- Another teacher felt that LC would be more appropriate for secondary level. She felt the children were too young to be participating in an online project, explained by her anxiety about young children using the Internet due to fear of predators.
- A third teacher suggested that in addition to the media study materials available that the Ministry compile a DVD with commercials and other media material, which would be extremely useful and will save teachers the time.

## VII. Description and Analysis of Online Activities

In previous evaluation reports we recommended changes to the Learning Connections portal to simplify its structure. As a result the project team introduced a number of changes. In this section, we describe the portal as it was at the end of Phase 3. Following the description, a summary of the online activity at the portal is presented.

### **General portal structure**

As mentioned earlier in this report, changes have been made to the portal structure such as removing the drop-down menu and replacing it with a dashboard menu. Now the homepage offers participants an ‘at-a-glance’ menu of portal areas. There are four categories: Program Areas, Tools, District School Boards, and Special Links. Literacy and numeracy activities are now grouped under Program Areas, along with the French portal and the Book Study. Tools include blogs, a videoconferencing class, webcasts and upcoming webcasts, Breeze meeting login, and coaching.

The Notice board provides quick access to the latest activity on the portal. The board is divided into Literacy, Numeracy, News—general program, the French portal, and Book Study. The calendar provides another way to access the activities in the portal. The new structure allows participants to see the structure of the portal and find their way around more easily. They also have an opportunity to see what’s new in the portal, which should facilitate their participation.

The notice board offers participants an ‘at-a-glance’ access to the most recent activity on the portal. The board is divided into several topics: Literacy, Numeracy, News – general program, and Le Conseil français de Notification. The board offers news items and links to a variety of activities in the portal, such as book discussions (Wee Can Count), a link to one of the school’s blogs, announcements about upcoming Ministry documents (e.g., *Technology to support literacy*), lesson plans (e.g., process writing, writer’s notebook), tips on teaching (e.g., 40 ways to integrate media literacy, literacy and math), announcements of webcasts, teaching resources (e.g., Appleworks files).

The portal also features the Summer Institute announcement and registration information.

### **Program areas**

#### *Literacy activities*

The Literacy activities section has been simplified. The activities page is divided into five categories: Writing, Media literacy, Critical literacy, Reading, Boys and literacy, and Digital Storytelling.

The Writing folder contains three documents related to writing instruction: Junior writing and media production, what is writer’s workshop, and writing: media log checklist. A forum on teaching writing in the Junior division features no topics.

The Media literacy folder presents a number of materials, including Exploring media forms, Media production in the Junior writing program, and video production lesson plan. Three frameworks of teaching media literacy are presented. They include 1) core concepts and questions, 2) media studies triangle, and 3) empowerment spiral. The Discussion forum contains a guided tour by the literacy moderator, a posting by one participant sharing his implementation plans, and five videos posted by the same participant demonstrating how the media literacy lessons were being implemented.

The Critical literacy folder focuses mainly on Webcasts. The forum contains two postings by the moderator in relation to Prof. Wayne Sproule's webcast, a webcasts sessions description, and a book review of a critical literacy resource.

The Reading folder contains several posted resources, including Online novel study and Adobe Connect (Breeze) lessons on drawing meaning from text. Two notes were posted by the moderator: a link to shared reading resources, and on technology to support reading.

The Boys and literacy folder contains different resources related to boys and literacy: Graphic novel list, Me Read No Way scavenger hunt activity, web sites for articles on boys' literacy, and Peter Brennan's webcasts agenda.

The Digital storytelling folder provides a description of what digital story telling is, links to digital storytelling reference list, a sample digital story, a folder for community-contributes links which has no postings, and digital storytelling forum with no topics added.

#### *Numeracy activities*

The Numeracy Activities page has also been simplified. Numeracy activities feature Rich problems and Problem solving. The categories have been created in response to participants' feedback.

The Rich problems folder contains activities related to rich problem solving, such as Mathematical tug of war, posted by the forum numeracy moderator. Another resource is a video article from MathForum on encouraging mathematical thinking, accompanied by a lesson plans on a cylinder problem. Two forums, Rich tasks for students and Rich tasks forum contains no topics.

The Problem solving folder also contains different materials and activities related to problem-solving. A review of Get it together is posted along with a sample activity on cooperative problem-solving using fractions. Another note deals with Bansho – a technique used in Japanese lesson studies to debrief students' work. The technique is described, and an example of Bansho is provided. Two messages were posted in relation to Bansho. In addition, instructional materials are posted, such as Guide to effective instruction in Mathematics K-6 Volume 2: Problem solving released by the Ministry, Mythematics (sic): an article about problem-solving in math, and a reading anticipation guide to accompany the article. The problem solving forum contains no topics.

### *En français*

The Francophone portal has six folders: Année 2006-2007, Formation - Champions, Général, Littératie, Numératie, and En Français Forum.

- Année 2006-2007 contains documents pertaining to the 2006-2007 academic year. They include Document de discussion – a document entitled Vers des points communs, le développement du caractère dans les écoles de l'Ontario (Towards common points: character development in Ontario schools) developed by the Ministry of Education, and five questions where participants are invited to discuss the document. The number of replies to the questions varies from 3 to 0.
- Enseignement différencié focuses on differentiated instruction and contains three notes posted by the moderator of the forum Rita Conley.
- Participantes et participants 2007 contains the list of participants in the Francophone Learning Connections.
- Ressources pour les enseignantes et les enseignants offers resources to teachers involved in the project. One folder contains a monograph entitled Faire la différence ... De la recherche à la pratique (Making a difference... From research to practice). Another document focuses on techniques of building community within mixed grade classes. Also, links to various resources are provided: Gestion - a website where classroom management is discussed, Atelier TFO - a website containing literacy and numeracy resources, and Comportement – a valuable resource for teachers.
- Résolution de problèmes offers teachers a video of a problem, and they are invited to watch it with their students, and videotape their responses. No postings were done by teachers.
- Links to two webcasts are also posted: Differentiated learning and Boys and literacy. Accompanying discussion forums have no postings.

Another folder is devoted to the Champions project. The folder includes reflection journals posted by 5 participants, a forum for the discussion of the Champions project with 7 postings, action plan of the participants in the project, a media presentation of the Champions project, and an evaluation form.

The General folder contains no new documents.

Littératie is devoted to documents and discussions of literacy. It contains *Directives pour les projets de recherches* – a file containing instructions on how to engage students in a research project. Several resources were posted by the moderator, including a link to the resource on reading strategies, L'atelier – an educational resource for literacy and numeracy teachers of Ontario; a presentation on differentiated learning produced by the Ministry of Education; a link to educational cyberquests; a website for learners of French

as a second language; and a PowerPoint presentation on literacy winning strategies. Two documents are posted: one outlining vocabulary teaching strategies, and another on activity presentation.

Numératie contains two new documents: a website *Le Kangourou des Maths* where a new problem is presented every day, and an article on open problem learning.

The discussion forum contains no new postings.

### *Book study*

Book study contains two folders. One is devoted to 6+1 Traits of writing – a book study project conducted by Parkland Public school in collaboration with Winston Churchill and Valleyview. The 6+1 workshop features a list of resources, posted by Parkland’s lead teacher and Learning Connections moderator, including 6+1 Favourites, 6+1 proofs chart and photo, 6+1 scoring rubric, and resources to support 6+1 writing. 6+1 writing documents contains a variety of documents, including writing samples, writing activities stressing different aspects of 6+1 writing, writing samples from schools, and a discussion forum with two postings. The discussion forum contains two discussions, one with the first meeting notes with two postings, and another with closing notes with three postings. Finally, the folder contains session descriptions, meeting notes, and instructions on how to use Breeze and the portal.

The second book study is devoted to the discussion of *The Teaching Gap*. This folder contains no new postings or activities.

### *Digital storytelling*

This is an alternative path to the Digital Storytelling folder.

## **Tools**

### *Blogs*

This document offers instructions on how to start a blog with Learning Connections. There is also a link to a sample blog which is maintained by the teacher and students of Winston Churchill Public School. The blog is hosted through the Learning Connections, and features many curriculum-related postings. The postings address topics like media literacy and Ryan’s Well foundation fundraiser in which students are taking part. The blog shows a great deal of active involvement on the part of the students and the teacher.

### *Breeze meeting (videoconferencing)*

This class allows participants to learn how to use Breeze software for videoconferencing. It makes extensive use of streamed video to show how to videoconference.

## **Webcasts**

Webcasts are separated into three categories: Literacy, Numeracy, and Other webcasts. The webcasts as streamed video are available at any time through the portal, or through a portal link to an ABEL server.

### *Literacy webcasts*

Literacy webcasts features an Instructional Intelligence workspace. It contains links to Dr. Barrie Bennett's two webcasts on instructional intelligence: An Introduction, and a sample teaching session entitled What works in Junior literacy. The page also contains materials to accompany the webcasts, including a PowerPoint of the presentation, a mind map of instructional intelligence, links to Dr. Bennett's website and his book. The discussion forum around instructional intelligence has no postings to date.

Another literacy webcast is David Booth's Literacy and boys. There is also a discussion forum around this webcast which has no postings to date. Also, Frank Serafini's webcast on Lessons in Comprehension: Creating Space for Reading Instruction and Peter Brennan's Boys and literacy webcast have been reposted and can be accessed through ABEL website.

The final folder in the Literacy webcasts is devoted to Wayne Sproule's series on Critical literacy and inquiry learning. The folder contains links to four webcasts: Teaching and learning for critical literacy, Learning through inquiry, Critical thinking and analysis, and Issues and decisions. The webcasts ran from December 2006 to March 2007. Each webcast has a corresponding folder in which additional materials are posted along with discussion forums. No topics have been added to the discussion forums.

### *Numeracy webcasts*

The Numeracy webcasts folder offers a number of webcasts devoted to numeracy. The first webcast is by Barry Scully who gave a talk entitled The Visual Image of a Number: What Can We Do to Help P/J Learners? The folder contains a permanent link to the webcast, PowerPoint slides and handouts from the talk, as well as a discussion forum with one message posted by the moderator.

Another webcast entitled Making School Data Dynamic Using TinkerPlots was presented by Sharman Howes in which she talked about using data as a source for analyzing progress and planning. The folder contains a sample data spreadsheet, and a discussion forum with no postings to date.

Two webcasts from earlier in the year, Tom Steinke's Developing data literacy in Grades 4-8 and Placing the right value on place value by Craig Featherstone are reposted in the Numeracy webcasts folder.

### *Other webcasts*

This category features webcasts that are not related to either literacy or numeracy, but still of interest to the participants.

These webcasts include both ABEL webcasts and Learning Connections webcasts. Among ABEL webcasts are two conversations with Alice Pitt; Barrie Bennett on Mind mapping, Stimulated recall, and Classroom observations; and Marc Prensky's keynote address entitled Engage me or enrage me.

Learning Connections webcasts include series on evidence-based decision-making: Monitoring student achievement, presented by Ann Gnoinski and Yvonne Gilinsky, and Evidence-based decision-making in the context of classroom planning by Robert Dunn and Ann Gnoinski. Another webcast was presented by Lorna Earl and Steven Katz on the topic of networked learning communities. Robert Dunn gave a talk entitled Identifying at-risk students based on the cohort tracking study. Two webcasts have been reposted from earlier on, Parkland Public School's video on the use of the learning carpet, and Ron Owston's talk on professional development principles. The upcoming webcasts link redirects participants to the ABEL streaming server where all upcoming webcasts are listed.

### **Breeze meeting login**

This page offers participants login into Breeze meeting space.

### **Coaching**

Coaching offers a space for the discussion and materials related to coaching. The page features a resource by the Curriculum Services Canada, as well as an article on coaching entitled *Improving Student Achievement in Literacy and Numeracy: Job-Embedded Professional Learning* put out by the Secretariat. The Discussion forum contains no postings.

### **District school boards**

This area offers workspace to different school board participants. At present three district school boards have their workspaces: Thames Valley, Trillium Lakelands, and Wellington Catholic. These pages were set up at the specific request of the district participants.

#### *TVDSB*

New items include a note posed in the General folder by the project manager entitled Items of Interest on the TVDSB Web Site which outlines new resources published on the school board website.

#### *TLDSB*

New items include Smart board ideas and resources folder, where a link to the TLDSB website outlining Smart board lesson plans and ideas is provided, and a Word document with Smart board links. TLDSB Literacy folder contains First Steps graphic organizers templates and explanatory notes, Online Novel Study created by a board librarian with links to study resources, and TLDSB literacy model.

#### *WCDSB*

The WCDSB workspace contains no new items.

## Special links

### *Champions*

The Champions workspace is devoted to Learning Connections Champions, the community members who champion LC job-embedded professional development in their districts. The workspace contains two new items: a journal entitled Inspiring writing in Wellington which shares the writing instruction strategies, and a note entitled An amazing writing resource about a writing resource kit by Thomson Nelson.

The rest of the section provides direct links to the following external websites: Ministry of Education, Secretariat Inspire, CSC website, Ontario Educational Resource Bank, eWorkshop.

Other resources include internal links to the list of LC participants, General forum, and the Summer Institute 2007.

In addition to the quick access menu, drop-down menu at the top of the page offers several options.

## Classes

This is a workspace featuring classes related to Professional Development, Literacy, Numeracy, Leadership, and Francophone classes.

### *Professional development*

Professional development contains no new classes.

### *Literacy classes*

Literacy classes for Term 1 have been posted. Based on feedback from Learning Connections participants, the use of the Classes structure was discontinued for Terms Two and Three. Information on the revised online Literacy collaborating environment, is on the Literacy Community page.

### *Numeracy classes*

Numeracy classes Term 1 have been posted. As above for Literacy Leadership, no classes have been added.

### *En Français*

En Français offers the same three sessions: La différenciation pédagogique - Étape 1 (sept. à nov.), La différenciation pédagogique - Étape 2 (déc. à fév.), La différenciation pédagogique - Étape 3 (mars à juin). Access to Étape 2 and 3 is restricted.

## Online activity

The portal records all activity of participants who log in and the site manager is able to generate summary reports on these data. We obtained two summary reports, one on the frequency of portal activity of the champions and one of the other participants which includes teachers. These are shown in Tables 2 and 3 respectively. The summaries show activity from September 1, 2006 to June 21, 2007 broken down into three periods:

September to November, December to February and March to June 21. The last period is 3.5 months. Login refers to the number of separate times participants logged in; Uploads refers only to uploading of files to the Library; Downloads are from anywhere in the portal; Discussion is the number of postings in the discussion forums; and Views is the number of portal pages viewed.

Table 3 Frequency of portal activity of champions

<b>PERIOD</b>	<b>LOGIN</b>	<b>UPLOAD</b>	<b>DOWNLOAD</b>	<b>DISCUSSION</b>	<b>VIEWS</b>
<b>Period 1</b>	85	0	27	35	391
<b>Period 2</b>	195	2	158	73	2011
<b>Period 3</b>	156	6	106	37	1304
<b>Total</b>	436	8	291	145	3706

Table 4 Frequency of portal activity of other participants

<b>PERIOD</b>	<b>LOGIN</b>	<b>UPLOAD</b>	<b>DOWNLOAD</b>	<b>DISCUSSION</b>	<b>VIEWS</b>
<b>Period 1</b>	107	0	41	47	245
<b>Period 2</b>	130	0	129	37	1919
<b>Period 3</b>	149	0	102	22	1252
<b>Total</b>	386	0	272	106	3416

Overall, these data show that the champions were considerably more active than the other participants because the champions were a much smaller group. Also, they indicate that when both groups logged into the site they tended to spend most of their time viewing pages instead of actively participating.

## VIII. Student Achievement in Participating Schools

In this section, we analyze the EQAO scores of students in participating schools to see if there was any impact of LC on student achievement. We examined two facets of the scores that are described below: cohort improvements and overall school trends. Extreme caution must be used in attributing any changes in student performance to LC because it is only one of several professional development activities taking place in the schools, and it is not possible to separate the effect of LC from other activities. Nevertheless, the analysis does provide some insight into the progress the schools are making in improving student learning outcomes.

### Cohort achievement improvement

First, we examined EQAO scores by cohort of students. We obtained the Grade 6 scores of Anglophone students in each school who were tested in Spring 2006. (Incomplete data were available for Francophone students so they could not be included.) Then we compared those scores to the Spring 2004 Grade 3 scores, which was the last time this cohort of students wrote the EQAO tests. These students would have experienced the effects of LC during the 2005-2006 and the 2006-2007 school years in Grades 5 and 6 respectively; however LC was not operating during the 2004-2005 school year when these students were in Grade 4. Some students would have transferred out of the schools and some would have transferred in during the three year period. We were not able to identify those students; however it is safe to assume that a majority of students would be the same.

The results of this analysis are given in Table 5 below, which indicates the percentage of students achieving the provincial standard of 75% on EQAO tests. Grade 6 scores are underlined when the percentage of students meeting the standard is higher in that grade than in Grade 3. From the table it can be seen that:

- 6 out of 7 schools had more students reaching the Reading standard
- 4 out of 7 schools had more students reaching the Writing standard
- 2 out of 7 schools had more students reaching the Mathematics standard

Several very dramatic changes occurred as well:

- St. Mary and St. Joseph Catholic students increased their Reading achievement significantly
- Bonaventure Meadows and Monck students had notable decreases in Writing achievement
- Bonaventure Meadows, Monck, and St. Joseph saw large decreases in Mathematics achievement

These results suggest that schools are making good progress on Reading and to a lesser extent on Writing. The most serious area of concern is Mathematics where three schools dropped dramatically and two stayed the same.

Table 5 Percentage of students achieving provincial standard on EQAO tests

SCHOOL	READING		WRITING		MATH	
	Gr. 3	Gr. 6	Gr. 3	Gr. 6	Gr. 3	Gr. 6
Bonaventure Meadows Public School	40	<u>42</u>	56	41	56	30
Monck Public School	82	79	74	62	85	66
Parkland Public School	66	<u>69</u>	58	<u>64</u>	74	74
St. Joseph Catholic School	43	<u>75</u>	57	<u>58</u>	64	40
St. Mary Catholic School	39	<u>67</u>	52	52	48	48
Valleyview Public School	57	<u>75</u>	61	<u>69</u>	65	<u>69</u>
Winston Churchill Public School	95	<u>98</u>	92	<u>96</u>	97	<u>98</u>

### Overall school achievement trends

In the Appendix we show the overall school achievement trends of Grade 6 students in participating schools from Spring 2002 to Spring 2007. We note that five schools of seven, Winston Churchill, Monck, St. Mary, St. Joseph, and Valleyview have more students attaining the provincial Reading standard by the end of the five-year period. All schools except for Winston Churchill have more students achieving the standard for Writing. Winston Church, an already high achieving school, dropped from 90% to 83%. As for mathematics, Winston Churchill is the only school to have more students meeting the provincial standard. These data illustrate, as did the previous analysis, that mathematics is a serious area of concern for almost all schools.

## IX. Summary and Recommendations

During Phase 3 of Learning Connections, which included the second full school year of the project, the management made several significant changes designed to address issues identified in the first year of implementation. They scaled up the project to include all Junior level teachers in the nine participating school districts in an effort to create a larger, more vibrant learning community. Management also began to communicate directly with school board decision-makers to help them gain a greater understanding of the project, rather than communicating through Student Achievement Officers. They abandoned the idea of trying to address systematic change at the board, school, and teacher levels in favour of focusing on teachers. A new strategy was adopted of identifying in each board “district champions” whose role is to provide leadership within the board, be a board advocate of LC, and serve as a board contact for management. Three part-time facilitators were hired with responsibility for numeracy, literacy, and francophone support respectively. Roles, responsibilities, and relationships with the Secretariat vis-à-vis LC management became much more clearly defined and very cordial during this phase, and funding issues were resolved. Lastly, LC’s staff made design improvements to the portal in response to concerns expressed the previous year and worked on attempting to resolve technical problems with videoconferencing.

Despite these positive changes, the project still faces some significant challenges with regard to implementation. Foremost is the need to create a more active online community, particularly as this is the main *raison d’être* for the project. Participants tend to log on occasionally, read some postings, or download a resource, but rarely contribute by posting questions or responding to others’ postings. As expected the champions were more active in the portal than teachers, although neither they nor the facilitators were able to motivate teachers to participate more. Alignment of LC with the participating board’s policies and priorities for literacy and numeracy professional development continues to be a problem as well. At the higher or more abstract levels, LC supports the boards’ goals; however, when drilling down to specific professional development plans, priorities, and strategies LC does not figure prominently into them. This issue seems even more acute in francophone schools where there appears to be some tension between LC duplicating boards’ online initiatives. A third challenge relates to technical matters. The design of the portal continues to draw complaints from participants who see it as confusing to navigate and difficult to locate materials. Problems with videoconferencing still seem to plague the project despite Herculean efforts of the project’s technical staff. These problems appear to stem partly from network infrastructure problems within boards and partly from the state of desktop videoconferencing applications which have not matured sufficiently to provide reliable, high quality communications that participants have come to expect.

With regard to the impact of the project on Junior level teachers, we must reiterate that LC is one of many professional development initiatives taking place in districts. Therefore, attributing changes in teacher beliefs or practice directly to LC cannot be done. We can only say that LC may have contributed to the changes. Our teacher survey

results indicated that, on the whole, teachers tend to support the major thrusts of the Ministry's expert panels on literacy and numeracy. When we compared differences between survey responses from 2005 to 2007, some significant shifts in teacher practice occurred. For mathematics, teachers reported using students' journals *less often* for assessment and they were *more in agreement* with using math problems that can be solved in many different ways. As for literacy practices, teachers reported using *less often* phonics instruction and novel study; and used *more often* for assessment purposes were interviews/conferencing and benchmark books.

Last year literacy teachers that we observed needed improvement in three areas: media and technology use, making accommodations for diverse students, and use of gender-sensitive practices. On our return visits to these teachers' classrooms, we found that significant progress had been made in the first two of these areas; however, most classrooms still need more work in incorporating gender-sensitive practices. Otherwise, literacy teachers fared well in all other aspects of their teaching that we observed.

Our observations of numeracy teachers suggest that they are strongest in teaching all five strands of the mathematics program rather than just number sense and numeration, use of open tasks with students, and in emphasizing discovery. They are moderately strong in having students work together to explore ideas, in building student confidence, and in using a variety of manipulatives and tools. We noted two areas of concern where declines from last year were observed: teacher assessment practices and few teachers having students communicate their mathematical understanding to one another.

When we analyzed the progress of schools in increasing the percentage of students meeting provincial standard on the EQAO tests, we noted that there has been steady improvement in Reading for most schools and to a lesser extent for Writing. Progress on Mathematics is cause for concern as there is a downward trend for most schools. Although LC cannot be attributed to any of the gains or decreases because LC schools typically have several initiatives taking place at the same time, the results are indicative of areas where priority should be placed.

## **Recommendations**

Online professional learning communities are exceeding difficult to design and implement effectively (Dede, 2006). Not only do program designers have to take into account issues of teacher learning and school reform, they have to consider how technology can support these processes when teachers are spread across a large geographic region. Given this challenge, we believe that Learning Connections is making steady progress towards its goal of creating a sustainable learning community to support literacy and numeracy instruction in the Junior Division. Extension of the project into a third year is a prudent decision because our experience in evaluating the ABEL Program demonstrated that it was not until its third year that a strong sense of community and commitment developed among participants and partners. With this in mind, we offer the following recommendations, which if adopted during Phase 4, will increase the efficacy of the project.

*Recommendation 1. Ask participating school boards to re-affirm their commitment to LC and to commit funds to release teachers to participate more fully in the project.*

LC does not figure prominently into most boards' professional development plans for literacy and numeracy, particularly the Francophone boards. This must change as it is essential that boards make a commitment to participate in order for the project to be successful. Part of this commitment must include funds for supply teachers so that participating teachers can be released to participate more fully in the project.

*Recommendation 2. Strengthen efforts to communicate with participating school boards, and particularly principals, about the goals and successes of LC.*

Now that the project has chosen to focus on school level change, LC management needs to get the word out to boards about what the project is trying to accomplish and why they should continue to support it. In doing so, they need to highlight the successes that have been achieved to date and offer convincing reasons why schools should continue to participate. School principals especially need to be targeted because of the turnover among those in the core schools and their support is essential if the project is to succeed.

*Recommendation 3. Continue to support and build on the champions model.*

The use of champions during Phase 3 was a very successful strategy adopted by management; therefore we recommend its continuance. An issue that needs to be addressed is the variable level of involvement of champions. We suggest that champions who have not been active be asked if they wish to continue in that role in Phase 4 and, if not, that they be replaced. Another suggestion is to try to identify a second champion in each district to serve as a backup and an additional advocate for the project.

*Recommendation 4. Consider transforming the project to a blended learning initiative to enhance community building.*

As mentioned above, development of an effective online community is exceedingly difficult. One of the reasons is the difficulty of participants to feel part of a virtual community whose members they scarcely know. Many teacher professional development projects have chosen a blended learning model to help overcome this difficulty. Therefore, we suggest that up to three face-to-face meetings be held each calendar year (e.g., fall, winter, and summer) in order to facilitate community building. These meetings would focus more on collaborative teacher activities, sharing, and planning, rather than bringing in outside experts. We realize there would be significant cost implications, but these could be shared by the boards and the project.

*Recommendation 5. Refocus the annual summer institute to be a more integral component of the project.*

The LC summer institute, which this year was combined with the ABEL summer institute, was a highly successful undertaking in terms of program quality, teacher

networking opportunities, and motivational appeal. Nevertheless, we believe that having an annual event such as this does not foster a strong sense of community among participants nor does it effectively facilitate joint planning and sharing, activities which are essential for a strong community. Therefore, the summer institute should become a more integral part of the project and be considered one of the three annual face-to-face meetings proposed above. This refocusing will likely change the nature of the summer institute activities for teachers by allowing more time for planning and sharing.

*Recommendation 6. Introduce project activities that emphasize the problematic areas in literacy and numeracy instruction that this report identified.*

The sample sizes for our surveys and observations were not large, so it is difficult to generalize our findings with a high degree of accuracy. Nonetheless, we identified some areas in which teachers more generally need assistance. For literacy, these include incorporating gender-sensitive practices, use of technology, and broadening teachers' conceptions of literacy to include new media such as CDs, web pages, and email. For numeracy, these include assistance with assessment strategies, conducting classroom discussions to encourage student-to-student interaction, and using a variety of manipulatives and tools. We believe if areas such as these are addressed in Phase 4 by making available online activities, streamed videos, and other related teaching resources more teachers will find LC relevant to their everyday teaching.

*Recommendation 7. Increase the emphasis on the numeracy component in all activities of LC.*

The analysis of EQAO scores suggests that schools are making good progress in meeting provincial reading standards and moderate progress on writing. Mathematics scores are an area of serious concern as only two schools showed improvements for the cohort of students who just completed Grade 6, and only one school showed improvement over five years. Therefore, we strongly recommend increasing the emphasis of the numeracy component of the program even if it means decreasing the emphasis on literacy.

*Recommendation 8. Conduct a usability study of the LC portal to identify problematic areas with the goal of improving the site.*

We heard many concerns expressed about the difficulty of locating materials and using the LC portal. Rather than trying to second guess what users are having difficulty with, we suggest carrying out a usability study. A usability study needs to bring together only about 3 or 5 teachers who are assigned some typical tasks such as locating materials, finding out when events are happening, and post messages. By observing these users, the portal developer will be able to rapidly and economically identify many of the "pain points" of the portal. This method of testing is referred to as "discount usability engineering" and can often locate 80% of the problems with websites (see Nielsen, 1994).

*Recommendation 9. Continue with the strategy of producing streamed video sessions.*

During Phase 3 increased emphasis was placed on producing streamed video sessions. This strategy proved to be successful in overcoming the technical limitations of having interactive videoconferences. Both Learning Connections and ABEL together are developing an excellent collection of professional development videos. The project might want to make the link to the archives of these videos more prominent on its website. At the same time they may wish to explore selling access to the videos for non-members (although this may produce issues with copyright and/or ownership).

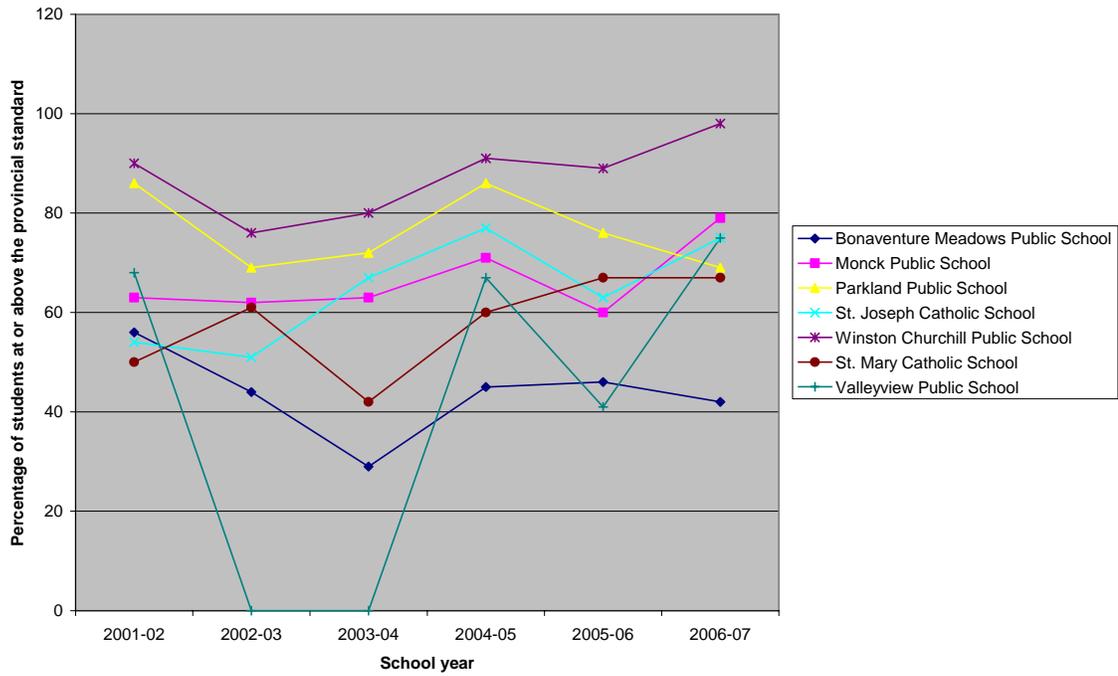
In summary, we believe LC has strong potential to assist in the transformation of Junior Division literacy and numeracy instruction in participating schools. During Phase 4 there is every reason to be optimistic that it will be able to reach that potential if these recommendations are adopted.

## References

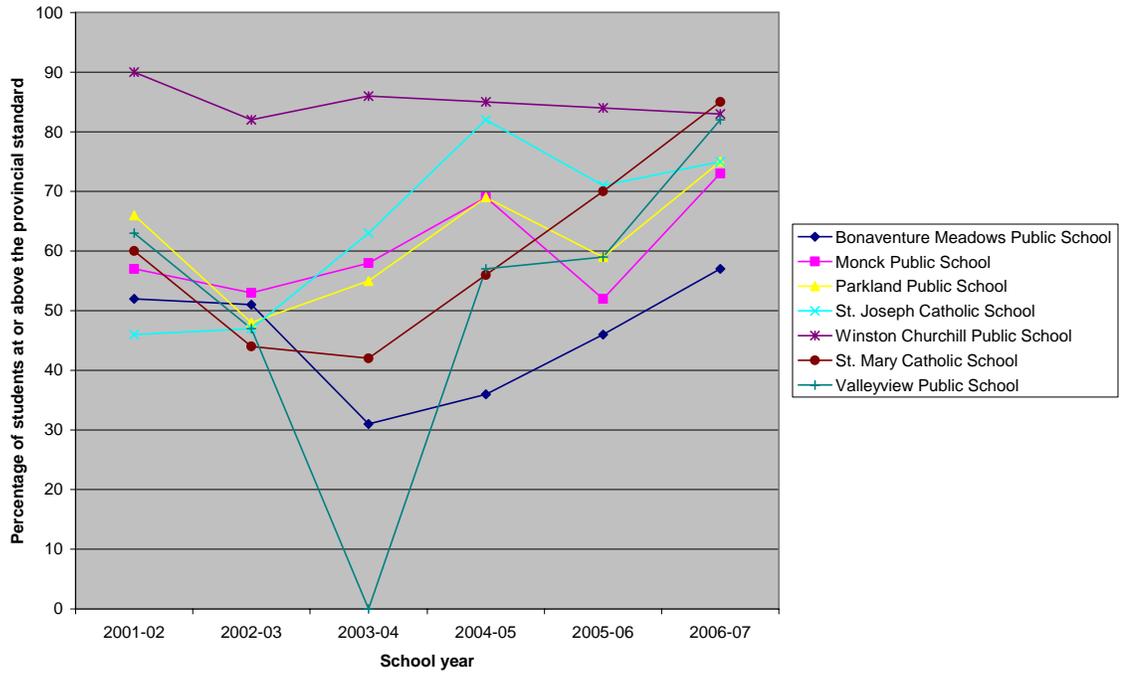
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# Appendix

## EQAO Grade 6 Reading Assessment



### EQAO Grade 6 Writing Assessment



### EQAO Grade 6 Mathematics Assessment

