A Study of the Use of Technology to Enhance Professional Development

The Alberta Teachers' Association in Partnership with Fort Vermilion Local No 77 and Fort Vermilion School Division No 52

The Alberta Teachers' Association

November, 2006

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Foreword

A Study of the Use of Technology to Enhance Professional Development is the product of cooperative research undertaken in the interests of exploring new avenues for teachers' professional development. As such, the volume fulfills part of the mandate of the Association, which includes the task of supporting teachers in their professional activities to keep abreast with current developments in education.

More specifically, this report documents a pilot project undertaken in partnership with Fort Vermilion Local No 77, Fort Vermilion School Division No 52 and the Alberta Teachers' Association. The goal of this pilot project was to investigate the effectiveness of a number of technology strategies for increasing access to professional development opportunities. This goal is a matter of particular importance for those teachers in geographically remote areas of the province. The expectation has been that some of the available computer mediated communication technologies will indeed prove to be helpful channels of professional development for teachers.

In general terms, this pilot project has made use of an action research approach to identify clearly what existing telecommunication technologies can contribute to enhancing professional development activities. The approach incorporated the results of a needs assessment survey, which was closely attuned to teachers' professional experience and needs. The project paid careful attention to exploring the usefulness of video conferencing for training workshops as well as to the value of SharePoint software and e-mail for information sharing. The results of this project will contribute to the ongoing redesign of services offered through the Association's TNET portal as well as to the improvement of teaching practices in the Fort Vermilion School Division.

I commend the work of the partners in this project and I encourage Alberta teachers to read the report's practical conclusions regarding the suitability of particular technologies for supporting teachers' professional development activities. It is my hope that this pilot project will have two outcomes; namely, teachers who are better prepared in their knowledge and pedagogical skills, and students who learn more enthusiastically and successfully.

Gordon R Thomas
Executive Secretary

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I. Introduction

In 2003 the Alberta Teachers' Association initiated a project to expand its professional development supports and services to members through the use of technology. The development of TNET, the Association's strategic plan for technology enhancement, was approved by the 2003 Annual Representative Assembly. TNET will make it possible to improve the level of service provided to Association members and its subgroups, and will enhance access to professional development services for teachers and school administrators. Coincident with TNET, the Alberta government is completing a $193 million telecommunications infrastructure project over three years to install SuperNet, a high-capacity network that connects provincial schools, hospitals, libraries and government offices. (Government of Alberta nd).

Fort Vermilion School Division No 52 has been engaged in developing the infrastructure to deliver instruction using a variety of telecommunication technologies. The school district faces challenges such as vast geographic distance, low student enrolment in some courses and schools, and lack of specialist teachers in some subject areas. It was with these concerns in mind that Fort Vermilion School Division No 52 was prepared to launch its Learning Suites technology in the 2003/04 school year. The goal was to see how effectively technology could help us overcome the difficulties posed by distance and isolation.

This report documents a pilot project, undertaken in partnership with Fort Vermilion Local No 77, Fort Vermilion School Division No 52 and the Alberta Teachers' Association, to ascertain the effectiveness of a variety of technology strategies for enhancing access to professional development for teachers in remote areas of the province.

II. Background

There is adequate evidence to suggest that the advent of Internet-based technologies has provided the catalyst in the paradigm shift in professional development from periodic to systemic. If, as Little (1992, 138) suggests, the role of professional development is to offer "meaningful intellectual, social, and emotional engagement with ideas, with materials, and with colleagues both in and out of teaching," then collaborative technologies are well suited to facilitate this practice, because they provide a medium in which these interactions can occur.

A Guide to Comprehensive Professional Development Planning (ATA 2005) defines professional development (PD) as "the wide range of activities school jurisdiction staff engage in individually and collectively to improve their practice and enhance student learning." At the heart of these activities is the individual, who is the catalyst for inquiry, discourse and reflection in which practitioners "formulate valid questions about their own practice, and pursue objective answers to those questions" (Sparks and Loucks-Horsley 1990, 243).

Professional development activities may include individual development, workshops and inservice education, as well as peer collaboration, study groups and action research. However, traditional approaches to professional or staff development have typically involved the "one-shot inservice day" (Allen 2004). These one-shot events often lack context, are designed and delivered by an external "expert" facilitator who is disconnected from the reality of teachers' immediate practice, and do not provide follow-up or continuity with teachers' ongoing practice.

This traditional model of episodic and decontextualized professional development is incompatible with current provincial policy, which requires all certificated teachers to develop an annual personal professional growth plan. The goal of these plans should complement the vision of professional development as "interactive, continuous, reflective and part of the day-to-day work life of teachers" (ATA 2005, 6).

New directions in professional development have shifted away from the typical one-off inservices toward sustained professional development in the form of ongoing training that emphasizes "student learning, job-embedded knowledge and skills, and continuous improvement" (Reese 2005). Hickey (2004, 24) refers to this new model as "perpetual learning." This new paradigm also emphasizes collaboration and the use of technology to facilitate these continuous collaborative practices. This vision of professional development as a developmental and collaborative process in which teachers

change their own practice has emerged as a theme in professional development. Resource centres such as the Virtual Teacher Centre (VTC) in Newfoundland and Labrador, the Hamilton County Educational Service Center, in Cincinnati, and the Schultz Center, in Duval County, Florida, are just a few examples of the efforts of departments of education to infuse technology-supported collaboration into their professional development programs.

A. Collaboration and Professional Development

Collaborative learning has its roots in the social constructivist perspective that emphasizes learning within the context of peer interaction. According to Vygotsky, peer interaction promotes reflection and internalization of meaning when learners explore, discuss, explain and debate topics (cited in Ormrod 2004). Many of the strategies associated with the social construction of knowledge—class discussion, cooperative learning and establishing a community of learners—are conducive to a technology-infused professional development agenda.

Collaboration offers many benefits: reduced isolation, opportunities for reflective practice, sharing of resources, and support and advice on issues of common interest (Koufman-Frederick et al 1999). Collaborative practices can bring teachers out of the isolation imposed by daily classroom realities and geographically disparate locations, and provide them with valuable opportunities to "learn with each other, to problem solve, share ideas, access professional literature, share samples of student work, assessment strategies, etc" (Hickey 2004). This type of meaningful engagement is the ideal environment in which to facilitate the "collegial and collaborative dialogue" that the Alberta Teachers' Association has identified as one of the fundamental principles of effective professional development programs.

"Professional development can no longer be viewed as an event that occurs on a particular day of the school year; rather, it must become part of the daily work life of educators" (Cook and Fine 1997). Therefore a key desideratum of continuous professional development is that it fit into the daily demands of school staff. Participation in PD activities quickly becomes problematic if either the schedule or location of the PD activity is incompatible with that of the participants. This is where strategically used technology comes in.

B. Technology-Supported Professional Development

In some cases, technology may provide a solution to the logistics of collaborative professional development. Electronic collaboration, either synchronous or asynchronous, may alleviate the time and geographic constraints of collaborative activities. These technologies, also referred to as computer-mediated communication (CMC), may be defined as the use of the computer as the medium for communication. CMC (Ferris 1997) is generally understood to refer to both asynchronous, by using e-mail or an electronic bulletin board, and synchronous, such as chatting or using group software, information manipulation, retrieval and storage, and electronic databases.

The ability of CMC to transcend time and geographic limits is its primary benefit. Asynchronous communications provide continuous and reasonably equal access to information. Synchronous communication, such as video conferencing, bulletin boards or chat rooms, facilitates interaction through discussion, collaboration, tutoring and other peer activities. The centralized repository of information through a webpage or bulletin board is a convenient and efficient tool for sharing resources and communicating with participants.

C. Types of Technology-Supported Professional Development

Koufman Frederick (1999) identified several forms of electronic collaboration: discussion groups, data collection and organization, document sharing, synchronous communication and online workshops. Though each of these forms of electronic collaboration can contribute positively to professional development, developers of PD activities must be cognizant of the limitations of these media. Electronic collaboration is rarely a true substitute for face-to-face interaction. The social nature of learning and the nuances of social cues inherent in face-to-face interactions are affected by the artifice of an electronic environment. Best practices on how to manage the limitations and potential weaknesses of electronic forms of collaboration are presented in subsequent sections of this study.

The following communication technologies were the basis of an action research project conducted by Fort Vermilion Local No 77, Fort Vermilion School Division No 52, and the Alberta Teachers' Association.

1. Study Groups

A study group is a group of individuals with a common interest who meet on a regular basis to explore agreed-upon issues. In the context of PD, those interests might include curriculum development, student assessment and technology integration. The specific focus and purpose of a study group are determined by its members. Generally speaking, however, the purpose of a teacher study group is to provide opportunities for and to promote professional dialogue that extends beyond the purview of the school's traditional staff development program. According to Roberts and Pruitt (2003), Dufour and Eaker (1998) and Fullan (2001), study groups are the cornerstone of the school's professional learning community. Study groups enhance group problem solving, leadership and communication skills, and foster professional relationships.

2. Discussion Boards

Online study groups typically use a medium such as a discussion board to post topics of mutual interest for discussion.

Discussion boards (also known as web boards, web forums and chat boards) are web-based asynchronous forms of communication. Discussion boards are flexible and can either be open to the public or require membership; the discussions may or may not be moderated by a facilitator; and may be structured as a formal learning environment or an informal place to converse about a variety of topics without a specific agenda. The agenda and structure of the discussion board depend on its specific purpose, which may be for topic-specific conversations, a collaborative project or an online course (Koufman-Frederick et al).

One advantage of using discussion boards to support collaboration is the elimination of the constraints of time and geography. Another advantage is that online discussion gives participants time to review and reflect, unlike real-time interactions, which indirectly discourage reflection.

3. Collaborative Websites

In some cases the online learning community's needs cannot be met by only one form of communication. In addition to communication facilities, there may also be a need for a repository of information and resources of common interest, such as current pedagogical research, lesson plans, curriculum materials and educational software. Many such repositories exist. For example, the National School Network (NSN), a distributed support, research and information exchange facility in the United States, is available at http://alpha.musenet.org:81/resources/

index.shtml, and the Australian National Schools Network (ANSN) is available at www.nsn.net.au/. The United Kingdom's TeacherNet is an extensive portal that provides resources for teaching and learning, management, professional development, research and education. School districts can create their own small-scale collaborative websites using products such as Microsoft's SharePoint, which facilitates the creation of extensible websites with document collaboration, information sharing and team productivity tools (www.gotdotnet.com/team/sharepoint/).

4. Video Conferencing

Technological advances in cost-effective, quality video over the Internet enable some schools to integrate video conferencing into their technology program. In 2005 Alberta Education invested approximately $6 million to establish and implement video conferencing across Alberta's kindergarten to Grade 12 education system (www.education.gov.ab.ca/news/2005/February/nr-VideoConferencing.asp). Alberta Education believes that video technology supports teachers and school administration by

- offering professional development directly to teachers in the field,
- creating mentoring opportunities between educators in different locations, and
- saving travel time and expense by allowing people to conduct meetings across a jurisdiction or the province.

Video conferencing is a type of synchronous communication that allows participants to view and interact with each other in real-time. The visual and social cues that are absent in the depersonalized context of text-based communication are present in video conferencing. These cues can help members personalize and improve relationships. The advantage of real-time interactions is the immediacy and instant feedback.

III. Overview

In September 2003 the Fort Vermilion School Division No 52 and the Alberta Teachers' Association launched a pilot project to determine the efficacy of selected technologies to support the professional development activities of jurisdiction staff.

The pilot project began in September 2003 and was completed in June 2005. In September 2003 a joint steering committee was formed and held its first meeting in the Fort Vermilion School Division office. At this meeting the committee reviewed the technology plans and current technology environments of the district and the Association, as well as the provincial SuperNet. The steering committee approved the project plan, which employed an action-research design to identify the possible technology-based strategies and to determine the effectiveness of each for enhancing teachers' access to professional development. The steering committee approved the following project outline.

1. *Understand the context*

- Administer survey to determine teacher needs.
- Review provincial, district and school education plans.
- Review district and school AISI plans.
- Identify available technology resources.

2. *Develop an action plan*

- Identify most appropriate technology-based strategies to support identified professional development needs.

3. *Implement the action plan*

- Develop and implement technology-support strategies.
- Train facilitators.
- Deliver professional development using various strategies.

4. *Gather assessment data*

- Gather data on teacher use of technology-support strategies, teacher satisfaction with various strategies and technical success.

5. *Write the project report*

- Write an overview of the project and steering committee activities and a description of technology-based professional development strategies used.
- Synthesize the assessment data.
- Make conclusions and recommendations.

IV. Professional Development Needs Assessment Survey

The steering committee designed a professional development needs assessment survey, which was administered in the fall of 2003 to all staff (administrators, teachers and support staff) of the Fort Vermilion School Division. The 125-item survey contained nine categories of inquiry:

A. Topic areas that will benefit you in your current assignment (25 items)
B. Preferences of delivery format (21 items)
C. Preferred time for professional development delivery (10 items)
D. Preferred location for professional development delivery (6 items)
E. Preferred method of notification of PD activities and learning opportunities (10 items)
F. Obstacles to your participation in professional development opportunities (13 items)
G. Technology skill level—teaching comfort (15 items)
H. Technology skill level—personal comfort (17 items)
I. About you—personal home computer use (8 items)

The survey was administered at staff meetings. A total of 16 administrators, 31 support staff and 101 teachers responded to the survey by the deadline, which represented 58 per cent of the Fort Vermilion School Division staff. Questions in Sections A–H of the survey instrument asked respondents to use a five-point Likert rating scale (where 5 = most preferred and 1 = least preferred) to rank each of the items in each section. Questions in Section I of the survey asked respondents to give a yes/no response. The responses for each group (administrators, support staff and teachers) were tabulated and grouped to ensure the confidentiality and anonymity of respondents. Therefore, the survey findings represented groups of respondents, rather than individuals. A discussion of the survey findings follows, and the complete summary can be accessed on the Alberta Teachers' Association website at www.teachers.ab.ca.

The results of the survey were grouped into five main areas that formed the basis of five goals. These goals were later transformed into guiding questions to identify the potential role of technology in professional development. The results of the survey for Sections A–H (Appendix A) are presented by discrete groups (teachers, support staff and administrators) in descending order; that is, from most

preferred to least preferred. The number of respondents and the mean are also listed. For questions in Section I, responses are also presented by discrete groups (teachers, support staff and administrators) in descending order and indicate the number of respondents and the percentage of yeses (Appendix B).

Appendix B shows the results of questions posed to participants about their home computer use.

V. Needs Assessment Survey Results

When asked which methods of delivery for professional development they preferred, teachers and administrators said they preferred traditional forms—specifically face-to-face collaboration with colleagues at a workshop or inservices that are active, hands-on and instructor led. Support staff also preferred these delivery methods in addition to on-the-job training. The least preferred PD delivery methods for all groups were self-directed and/or technology-based.

The preferred time for professional development for teachers, administrators and support staff was on a school calendar day and during school hours. The next most desirable times to learn for all groups were anytime, anywhere online and immediately after the school day. The least preferred times were evenings, weekends and before school. Not surprisingly, given these responses, the most preferred location for PD for all groups was the worksite or somewhere in the district. Administrators were more receptive to learning out of district, while teachers and support staff preferred Web-based or distance learning. Administrators were least receptive to Web-based and distance learning.

The preferred methods of notification of professional development activities and learning opportunities for all groups were personalized forms of communication such as e-mail, announcements from administrators or supervisors, and notices mailed from the school or district. The least preferred methods of notification were advertisements in journals and newsletters, notices on Internet websites and notices on bulletin boards.

The survey asked respondents to identify obstacles to their participation in professional development opportunities. Teachers indicated that adverse weather and distance, too much time away from work, lack of substitute coverage, lack of personal time to attend, and PD offered at inconvenient times or locations were the greatest barriers to participation. Family issues such as child care and lack of administrator support to attend were the least significant barriers to teacher participation. Administrators indicated that too much time away from work, lack of personal time, substitute coverage, and lack of quality courses or workshops were the most significant barriers to participation. Support staff indicated that lack of relevant courses was the most significant barrier followed by adverse weather and distance to travel, and lack of quality courses or workshops.

The next question focused on staff skill and comfort with technology hardware and software programs. All groups were most comfortable using word processing, Internet search engines and e-mail. All groups were least comfortable using video editing, database, website design tools (Frontpage, HTML), listservs, chats, forums and bulletin boards.

Access to technology was rated as good by all groups, but only a small percentage of the respondents had been part of or used a listserv, chat room or forum. Eighty-one (81) per cent of teachers owned a personal computer, 64 per cent would take advantage of PD opportunities that could be accessed from home and 61 per cent accessed teacher resource websites such as 2Learn and the ATA website on a regular basis. Only 29 per cent said that they had been part of or used a listserv, chat line or forum, and 38 per cent were presently involved in or had taken advantage of online PD using either a school computer or their home computer. Eighty-eight (88) per cent of administrators owned a personal computer, and 71 per cent would take advantage of PD opportunities that could be accessed from home. Thirty-eight (38) per cent of administrators had been part of or used a listserv, chat room or forum, and 41 per cent were involved with or had taken advantage of online PD through school or from their home computer. Seventy-one (71) per cent of administrators said they would take advantage of PD opportunities that could be accessed from home.

VI. Development of Research Questions and Action Plans

At its second meeting, in December, the steering committee reviewed the results of the needs assessment and reflected on the district and school priorities. The committee identified five research projects that would be the focus for using technology to enhance teachers' access to professional development. The projects were guided by the research questions below. The text following the questions provides rationales and additional background information:

Question 1: How effective is video conferencing for facilitating a professional learning team meeting organized to examine student work? (Math CASL groups)

The Alberta Initiative for School Improvement (AISI) project in Fort Vermilion School Division is entitled Enhancing Literacy and Numeracy. AISI provided the research project with an organized group of mathematics teachers who shared the same PD needs. The Learning Suites (video-conference rooms) were used for meetings of the collaborative analysis of student learning (CASL). The steering committee decided to study the effectiveness of the math CASL meeting, because these meetings would be similar to those that could be organized by subject/curriculum professional learning communities operating at the district level across schools.

Question 2: Can collaborative software, such as SharePoint and e-mail, be used to enhance regular communication between teachers of the same grade level or curriculum in different schools?

The needs assessment survey results showed that teachers wanted professional development that is subject/curriculum specific. The steering committee decided that the 2Learn website and other websites were fulfilling this need. Instead it was decided to support teachers' desire to communicate and collaborate with peers teaching the same curriculum or subject in schools across the school division. Communication among teachers with similar classroom situations should reduce the isolation caused by distance and offer an opportunity to share instructional strategies.

Question 3: Can teachers' professional development needs related to pedagogy be supported using the school division website?

The needs assessment results indicated that teachers wanted to learn about new instructional and assessment strategies. (Appendix C) The steering committee linked this finding to the provincial Teaching

Quality Standard requirement that teachers make decisions about and use appropriate pedagogy based on student learning needs. Current pedagogical information would also support teachers in the completion of their individual professional growth plans.

Question 4: How effective is technology in enhancing access to professional development for a group of teachers separated by distance but interested in the same professional development topic?

The needs assessment results indicated that teachers wanted access to PD from the school during school hours, immediately after school or from home on a personal computer. They wanted to participate in PD that included face-to-face workshops and opportunities to collaborate with colleagues. The steering committee decided to use a variety of technology-based professional development activities linked together over the school year to form an ongoing program focusing on differentiated instruction.

Question 5: From the viewpoint of participants, can video conferencing be effectively used to support local ATA committee meetings?

Teachers identified adverse weather and distance to travel as their greatest barriers to professional development. The steering committee also realized that adverse weather and distance are barriers to teacher and administrator participation in division meetings. The local ATA holds its council meetings in Fort Vermilion, which means that the majority of teachers must travel between one and two-and-a-half hours to attend an evening meeting. It was decided to use the Learning Suites (video-conferencing technology) to facilitate a local meeting.

Next Steps

After the research questions had been agreed upon, committee members formed work groups. Each work group developed actions and strategies, a timeline and outcome measures for the research questions. To develop detailed research plans, the committee had to think through all the steps that would be required to implement the project. The steering committee then read "The Age of Accountability" (Guskey 1998), which discusses the evaluation of professional development. Using Guskey's framework, the working groups determined the outcome measures and data that would be collected for each step in the five research projects. This data would be used to evaluate the success of each of the various technology strategies in meeting the professional development needs of the participants. The working-group research-project plans are included in Appendix D.

One of the early goals of the steering committee was to have as many teachers as possible view the video-conferencing suites in use. Video-conferencing suites are rooms that are specially equipped with video and telecommunications equipment that facilitates professional-quality video production and broadcasting. In March 2004, the senior high schools with video suites offered an interactive presentation by one of the learning suite teachers to allow teachers to take part in a video conference. This orientation presentation was done in a series of after-school sessions. Interested teachers from various schools were provided with a list of days and schools where the presentation would be offered so they could choose the time that fit their needs. Host teachers provided the technology support at each site to ensure that any problems could be handled quickly. This strategy was not successful in all instances, because a limited number of teachers were trained to use the equipment and they were not always available. The steering committee organized another series of presentations early in the 2005/06 school year, so that teachers who did not attend the previous sessions would have the opportunity to view and use the suites.

VII. Research Questions and Evaluation Findings

This section provides an overview, information on factors that affected the study, and evaluations and recommendations stemming from each of the survey questions.

Question 1: How effective is video conferencing for facilitating a professional learning team meeting organized to examine student work? (Math CASL groups)

1. Overview

The majority of junior high schools in the area are very small and have only one math teacher. With schools being as much as 350 kilometres apart, face-to-face collaboration on a regular basis is impossible. The goal of this research question was to ascertain if video conferencing was an effective communication device for teachers isolated by large distances to meet and share ideas, practices and plans. The vehicle chosen to explore this question was a process called Collaborative Analysis of Student Learning (CASL) (Langer, Colton and Goff 2003). CASL is "a system developed for teachers to participate in collaborative inquiry study groups to understand the connections between their standards-based instructional goals and their students' learning and achievement" (Pasquarelli 2004). The CASL process is designed to allow teachers to track a particular student over a period of time, collaboratively analyze the student's work and suggest instructional strategies to positively influence the student's learning.

The two AISI coordinators attended a facilitator-training course with the developers of the CASL process. It was decided to invite senior high mathematics teachers from across the division to participate. An initial face-to-face meeting was held to introduce teachers to the process and to determine the interest level. As a result of this meeting, two teams of four teachers (including a student teacher at one of the schools) were formed. Each team held its CASL meeting approximately every two weeks using the learning suites (video conferencing) in the five high schools in the school division. Details of the technical operation of video-conference suites are found in Appendix E.

Each teacher in the team presented the work of a particular student, and the team as a whole analyzed the student's material using a structured meeting process. They then discussed instructional strategies and set short-term goals for the student for the period of time until the group met again. These initial teams met between March and June of 2004, with a final comprehensive project debriefing

and celebration in June. When six of the eight teachers' teaching assignments changed in 2004/05, it became impractical to continue the same teams for the second year.

The successes of this first project led to the development of groups from the junior high schools in the 2004/05 school year. Again, a face-to-face initial meeting was held in November to assess interest, develop norms, choose teams and train the participants on the equipment. Two teams of five teachers were formed, and meetings were scheduled approximately every three weeks. Team membership was reduced to three teachers in each group due to time commitments, teachers leaving the division and maternity leaves.

2. Significant Factors That Influenced the Study

With the exception of the initial meeting, meeting times were always on the teachers' own time, which limited participation. Another factor affecting the success of the study was the lack of access to the video-conferencing suites during the school day, because the suites were used for regularly scheduled classes. Therefore CASL team meetings had to be held after school. However, because participation was voluntary, team members were very committed and focused during the meetings.

In addition, some of the junior high teachers had to travel to a different school to access a video-conferencing suite, which was problematic during winter weather. However, principals were extremely supportive and allowed these teachers to leave school early on meeting days so they could be at a video-conferencing site by the 3:30 PM start.

3. Evaluation

A pre- and post-evaluation of the CASL process used in 2004 indicated that all the participants found the process useful and said that it had a positive impact on their teaching practices. All said they would take part again and would recommend the process to others. One of the most important benefits was the valuable opportunity for collaboration between teacher peers in the division, something not usually available to them in other PD activities. Since the pilot project ran from March 2004 to June 2004, several of the participants commented that, although change was noted, the short time frame limited the effectiveness.

The CASL process using video conferencing was continued in 2005. Two teachers from the 2003/04 senior high group chose to participate in the 2005 junior high group. In the post-evaluation survey, the majority of participants' expectations were met by using video conferencing for the CASL process. Two of the teachers participating in the video conferencing commented that lack of familiarity with the equipment was a barrier to their participation.

4. *Recommendations for Using Video Conferencing for a Professional Learning Team Meeting Organized to Examine Student Work*

The following is a list of recommendations for the successful implementation of video conferencing to facilitate collaborative assessment of student work:

- Plan an initial face-to-face meeting to review the CASL meeting process, develop group solidarity and train all participants to use the video-conferencing equipment.
- Have each CASL group include a maximum of five participants to allow and encourage active participation of all group members.
- Choose an enthusiastic moderator to facilitate the meeting.

Question 2: Can collaborative software, such as SharePoint and e-mail, be used to enhance communication between teachers of the same grade level or subject in different schools?

1. *Overview*

This question focused on using two different technology-based strategies projects: grade-level e-mail lists and grade-level/subject-area SharePoint sites.

The grade-level e-mail lists were developed to enable teachers to network and communicate with their grade-level/subject colleagues in schools across the division. These lists would also decrease the amount of e-mail being sent to the entire school division staff, because the message could be directed to particular teachers. The distribution lists were compiled using the staff lists from central office, and school administrators were contacted by e-mail to verify the lists. The resulting lists were then distributed to all staff in the division and added to the global address book for the division.

The development of the collaborative grade-level and subject-area websites started with a meeting with a member of the division technology team. Upon examining available technology options, it was decided that Microsoft SharePoint would be the best program for this study, because the division had the appropriate licences and the software is very user-friendly. Microsoft SharePoint is a suite of Web-based collaboration and communication services, such as forums, file sharing and websites. The use of SharePoint also ensured that the websites were only accessible to Fort Vermilion School Division staff.

The next step was to identify teacher forum moderators for the planned websites. A moderator is a person who supervises the discussions in a Web forum. In essence, the moderator is a virtual chairperson

who ensures that forum postings remain on topic and encourages discussion. The responsibilities of the moderator include

- welcoming participants;
- regularly monitoring discussions;
- facilitating the development of discussion threads;
- responding to participants' questions, interests, ideas and concerns (by providing information, introducing related issues, and referring to posted resources and other messages);
- organizing the flow of the conference;
- encouraging participants to use appropriate threads; and
- summarizing the discussions on a periodic basis or in a final report. (Boak and Blackburn 1998, 16)

One moderator was used for each grade level from kindergarten to Grade 7, and each subject area for junior and senior high. An e-mail was sent to all division teachers promoting the project as an exciting PD opportunity. The announcement included a project description and an invitation to interested people to respond. The committee received responses from the majority of elementary grade levels and one high school English teacher. It was decided to start training with this group, known as the virtual teams moderators, and to continue to look for more moderators as the project grew and interest developed.

The steering committee understood the importance of holding a face-to-face meeting with all virtual team moderators at the beginning of the project to create a sense of unity. The meeting would also help to ensure that everyone received the same information and that all questions or concerns could be addressed. Release time was approved and the virtual teams workshop was scheduled for early January 2005.

Prior to the delivery of the virtual teams workshop, the division IT staff set up individual SharePoint sites, with different Web addresses for each grade level and a subject-area moderator. This minimized the technical responsibilities of the moderators, who could focus on customizing and uploading content to their SharePoint sites.

Nine teacher moderators, as well as some members of the steering committee who became moderators, attended the virtual teams workshop. A member of the division IT staff provided training in SharePoint in a computer lab during the morning. The moderators learned how to use the program and then spent time at the beginning becoming accustomed to and organizing the sites. In the afternoon a teacher from another district shared the successes and challenges of her experience as a website monitor and provided the moderators with helpful tips to ensure their success. Participants later had a chance to evaluate this workshop.

The moderators left the virtual teams workshop eager to begin the project. They received a list of people to include in their site and a detailed how-to manual for SharePoint. The moderators agreed to work on their sites over the next two to three weeks and to notify the moderator group when they were ready to invite people to access the site. The project leaders continued to communicate with moderators to share tips and ideas, and to make sure they still felt like part of the group.

One by one the sites were opened up to grade-level and subject-area teachers. Moderators e-mailed teachers, inviting them to access the sites. The SharePoint sites included space for discussion, links and uploading assignments, tests, rubrics, organizational materials, and year plans for each subject area Each site was both unique and inviting. Some sites included surveys, a calendar and space for pictures. Appendix F contains screen shots of the basic SharePoint site and services.

Moderators e-mailed teachers in their grade/subject group over the following months to promote the site and encourage people to visit. Moderators also uploaded their own materials to the site and e-mailed announcements when new materials were added. Some offered prize draws for teachers who posted.

A video-conference meeting of moderators was organized for March to discuss successes and challenges. Although moderator attendance at this meeting was lower than at the training meeting, the time spent together was productive. Moderators noted that the biggest challenge was getting teachers to visit the sites.

The following strategies were developed to promote the sites:

- A newsletter outlining the overall project and work of the steering committee was e-mailed to all division staff. Paper copies were also distributed by the two AISI coordinators, who were members of the steering committee. The newsletter encouraged teachers to visit the SharePoint sites, and provided the names and e-mail addresses of site moderators and people who could provide technical assistance.
- The AISI coordinators promoted the sites by demonstrating them to teachers during school visits.
- A demonstration of the SharePoint sites was given during an ATA Local Council Professional Development Committee meeting. School representatives learned how to use the sites and were encouraged to promote them to teachers in staff meetings or other appropriate forums.
- Existing district curriculum resource materials were transferred from technology folders on the division website to the appropriate SharePoint sites.

At its May 2005 meeting the steering committee decided to create a SharePoint site for beginning teachers in the division. Currently the Fort Vermilion curriculum specialists work with other teachers in the division to put together binders of curriculum-support material. This material has been transferred to the beginning teachers' SharePoint site, which is also linked to the other subject-area and grade-level sites. The steering committee hopes that this new site will provide beginning teachers with a collaborative workplace to share materials and an opportunity to communicate with other beginning teachers. The beginning teachers' SharePoint site will be demonstrated during the annual new-teacher orientation meeting held in August.

2. *Significant Factors That Influenced the Study*

Two factors may have influenced the level of teacher participation in the SharePoint sites. The first was a period of labour unrest that resulted in a strike vote just as the sites were being launched. Time of school year may have also been a contributing factor. The SharePoint sites were launched in March 2005, and the Professional Development Needs Assessment Survey was administered to teachers two months later, in May 2005. The steering committee was curious to see the level of site activity over the entire year, because it was assumed that the fall period would experience higher usage.

3. *Evaluation*

   a) *Grade-Level and Subject E-mail Lists*

      The steering committee asked ATA school representatives at local council meetings for feedback in the months following the development of grade-level and subject e-mail lists to determine if the lists were being used. It appeared that the lists were a good idea but that better promotion was needed to encourage greater teacher use.

      A survey to evaluate the research project, administered to teachers at the end of this study, indicated that 67 per cent of respondents were aware of the lists, but only 39 per cent knew how to access the lists. Teachers identified the following barriers to using the e-mail lists: lack of computer expertise, lack of time and insufficient knowledge. Many respondents recommended that an initial training session be held to help them become more familiar with the software.

   b) *Grade-Level and Subject SharePoint Sites*

      Evaluation data from the virtual teams workshop for site moderators showed that participants found the training workshop to be both enjoyable and practical. When asked to rate overall presentation, practical value of workshop, participant

involvement, material provided, techniques/methods and delivery, 77.7 per cent of participants responded "excellent" and 22.2 per cent responded "good."

Year-end feedback from moderators indicated that though there was still enthusiasm for the project, there was also some frustration. Some moderators were disappointed that more people had not posted to their sites. Others felt confident that the sites would continue to grow and become a regular tool for teachers in the division.

Teacher results from the evaluation survey indicated that 61 per cent of respondents had visited a SharePoint site and 20 per cent had uploaded a document to the site. Web links on the site were used by 28 per cent of respondents, and 17 per cent had used documents found on the site. It is encouraging that 87 per cent of respondents agreed with the statement, "The use of the SharePoint site as a means for PD is valuable."

Almost all suggestions for improvement of the SharePoint sites focused on the need for an inservice training session on how to use the websites. The steering committee made plans to address the training issue with all teachers during sessions at both the beginning teacher orientation meeting and division PD day in the fall of 2005. Another suggestion was to have a central webpage for links to all grade-level and subject-area sites instead of a different URL for each. Based on this feedback, access to all the SharePoint sites was created on the Fort Vermilion School Division homepage.

4. *Recommendations for using collaborative software, such as SharePoint and e-mail, to enhance communication between teachers of the same grade level or subject*

Those interested in developing technology-based strategies to enhance teacher communication are encouraged to develop a detailed project that includes communication strategies. Communication with and between moderators is important to support their efforts, as is communication with teachers.

Maintenance of the group e-mail lists should be included as part of central office staff duties. The effectiveness of the group e-mail lists is diminished if the lists are inaccurate or outdated.

All teachers in the division need training to learn how to effectively use the software. Lack of familiarity with the technology is a barrier to use. It is recommended that this technology training happen early in the school year during such events as new-teacher orientation and division PD days. Moderators of the e-mail group and SharePoint sites

require specialized workshops to develop their skills and instill in the moderators the feeling of being part of a team.

SharePoint sites and e-mail lists must be conveniently located on the school or division homepage. When moderators send announcements about additions to the site, they should include the URL. As with any new website, the number of visitors to the site must be tracked and a space should be provided for visitors to post comments and feedback. As well, all information on the site must be current, and seasonal material should be posted when appropriate. For example, information about classroom organization and climate building should appear in September, and parent–teacher interview tips in November.

Question 3: Can teachers' professional development needs related to pedagogy be supported using the school division website?

1. Overview

In the needs-assessment survey completed in the fall of 2003, teachers and school administrators ranked needs for professional study. One of the identified needs was a centralized Web-based educational portal. In December 2003 work began on developing a section of the Fort Vermilion School Division website that would list links to websites related to teacher and school administrator pedagogy.

Among the areas under consideration for this study was a user-friendly website with links to pedagogical sites. The website would have tools to count hits, and ask for comments and feedback.

The committee encountered some barriers to implementing this study. First the division's technology infrastructure did not support online access to websites that contain video clips, which limited the content available to teachers and school administrators. Furthermore, the division had not purchased the licences and/or memberships to sites that contain valuable pedagogical information. And at the time of this project, the division schools had not yet been connected to SuperNet, which limited staff from accessing sites that required a lot of bandwidth.

Given these barriers the steering committee decided to abandon this study as part of the overall project. In the fall of 2005 the steering committee was advised that the Alberta Teachers' Association was planning to develop a section on its website to support PD needs related to pedagogy for both teachers and administrators. The Association is currently developing its TNET (Teacher Network) site, which will be available to teachers in the fall of 2006.

Question 4: How effective is technology in enhancing access to professional development for a group of teachers separated by distance but interested in the same professional development topic?

1. Overview

The goal of this project was to develop a way to provide professional development to a teacher study group using a variety of technology strategies. The topic of focus for the study group related to both teacher-determined needs and to the work of the school division. Determining the appropriateness of and access to various technology strategies was important in the development of the research plan.

Teachers provided feedback on their areas of interest through the needs-assessment survey completed in the fall of 2003. An area of high interest was differentiated instruction (DI), which was also a priority for the division's AISI project. Differentiated instruction is a teaching theory based on the premise that instructional approaches should be adapted to individual students (Hall 2002). Given the high level of expressed interest, it was decided to pursue an investigation of a study group on differentiated instruction.

The steering committee, working with the Northwest Regional Learning Consortium, provided a full-day workshop, facilitated by Martha Kaufeldt, for the teachers of the Fort Vermilion School Division on the October 2004 divisionwide PD day. Teachers attending this session were introduced to the concept of an online study group that would use e-mail, SharePoint sites and video-conference suites as tools for professional development. Following the workshop a general e-mail was sent to all teachers to invite them to enrol in the study group. A total of 21 teachers registered for the study group, which began in November 2004.

Using a discussion board format, SharePoint software allowed teachers to share electronic resources and files, and to converse. Initially participants received a self-assessment tool to determine their strengths and areas for development related to DI. Next an article was e-mailed that asked questions of teachers, who posted their answers on the discussion board. Participants responded to the posted question and posed additional questions, to which other teachers responded. This process was repeated as additional articles and information were posted. Tracking of the postings and responses, as well as who was participating in discussions, was possible using the site.

In January 2005, approximately two months after the study group began, a second meeting was held using the video-conferencing learning suites. As part of the meeting, teachers watched a video about a DI classroom. Discussion at the workshop helped to determine

the next set of professional development materials to be posted on the DI SharePoint site. Some of the teachers had to travel to another school in the division to access the video-conferencing equipment. Unfortunately, a snowstorm caused low attendance at the video-conferencing meeting (eight participants in two video-conference suites).

In May 2005 a second workshop was held using the video-conferencing learning suites. This workshop focused on DI learning profiles and was presented by Joni Turville, a member of the Association instructor corps and a DI specialist. Three video-conference suites were held, and 15 people participated. The purpose of the workshop was to provide opportunities for discussion both at each site and with the entire group, to view a video segment by the group and to plan a lesson for use in the classroom.

2. Significant Factors That Influenced the Study

During the course of this study group, labour unrest may have affected the level of interest and commitment of group members. In addition, two schools were not connected to SuperNet until later in the year, which made it difficult for teachers to access the Internet or e-mail from school. Six of the original 21 teacher registrants were staff members at these schools.

3. Evaluation

The initial response to the prospect of an online study group was encouraging, as it was a new venture for teachers in the Fort Vermilion School Division. Video-conferencing suites had been used for teaching for one year; however, they had not been used for PD. SharePoint sites were new to teachers and proved to be a learning experience for all involved. Of the teachers who had signed up, 50 per cent posted responses to questions or posted their own questions for discussion. The design of the SharePoint sites did not facilitate the tracking of visitors who might have read a posted article but did not participate in the discussion.

In May 2005, teachers who had signed up as participants in the study group were sent an online survey. Nine surveys were completed. All of the respondents strongly agreed or agreed that using the SharePoint sites for professional development was valuable. More than half of respondents (56 per cent) said that there were no barriers to using the SharePoint site; however, 33 per cent felt that lack of time was a barrier.

The survey asked participants to reflect on the use of video conferencing suites as a meeting and workshop-delivery strategy. All respondents strongly agreed or agreed that video conferencing is an

effective strategy for delivering professional development. The benefits of this medium included reduced travel time, more efficient use of time, better topic focus and avoiding inclement weather.

Participants identified two barriers to the use of video conferencing: the lack of face-to-face interaction between participants at different video-conference suites and the considerable distance some participants had to travel to the nearest video-conference suite.

Asked if they would participate in a workshop using the video-conference suites in the future, 100 per cent of respondents said yes.

4. Recommendations for Using Technology to Facilitate a Study Group

It is essential that group members receive training in the use of the hardware and software that will be used for professional development.

In this study, all interaction among group members was done using technology; there were no face-to-face meetings. Information regarding access to the SharePoint sites was sent by e-mail to all teachers registered. We suggest that future study groups of this type begin with a face-to-face meeting, where participants receive training on the type of technology to be used, how to access shared documents, upload documents, post questions and reply to questions. Had such a meeting taken place with this group prior to the use of SharePoint sites, teacher involvement might have increased. Instruction on the use of the video-conferencing equipment in the Learning Suites was also needed.

Time is always a critical factor in any type of professional development. Using the SharePoint sites provided some flexibility for teachers, because it was asynchronous and therefore could be used whenever teachers had time. The ability to access the site from home also allowed for more flexibility.

Question 5: From the viewpoint of participants, can video conferencing be effectively used to support local ATA committee meetings?

1. Overview

Professional development opportunities for teachers are often planned, designed and delivered by the PD committees of the ATA locals. These committees meet every month during the school year, which means extensive travel time for some committee members. The project steering committee decided to undertake a study to determine if video conferencing could facilitate committee meetings. The strategy was also seen as another way to promote more teacher involvement in different activities in the project. The research plan was developed to host one, possibly two, ATA Local Council (November 2004) and Professional Development Committee meetings (January 2005).

2. Significant Factors That Influenced the Study

People reported feeling some initial discomfort using the video-conference technology for the first time. The sensitivity of the microphones to side conversations interfered with the person who had the floor. Some participants were uncomfortable asking the speaker to clarify a point of discussion, which led to more side conversations. In some instances there was no access to support staff to deal with technical problems. All of these factors related to using the new equipment interrupted the flow of the meeting.

3. Evaluation

Over half (58 per cent) of teachers in attendance completed an evaluation survey. Sixty-five (65) per cent agreed or strongly agreed that video conferencing was an effective meeting tool, and 31 per cent disagreed or strongly disagreed. The two most significant benefits acknowledged by 89 per cent of participants were reduced travel time and no concern with road conditions, while 47 per cent of participants felt that the meeting was more time efficient and focused. Negative aspects of holding a video-conference meeting were lack of face-to-face contact (84 per cent), unfamiliarity with equipment (58 per cent) and unfamiliarity and lack of comfort with the format (42 per cent). Other negative aspects mentioned were lack of the sense of community and the distraction caused by the camera.

When participants were asked if they would participate in another meeting using video conferencing, 84 per cent said yes and 16 per cent said no. Fifty-eight (58) per cent believed that the local should use video conferencing on a limited basis, such as during winter or for emergent meetings. Twenty-one (21) per cent believed that video conferencing should not be used for meetings in the future.

Not everyone was receptive to the new medium. During video conferences some people said that they did not feel part of the meeting and that such meetings may not meet their personal goals of socializing and establishing a spirit of collegiality with colleagues across the division. Some participants commented on the need to have materials prepared and distributed prior to the meeting. One participant said that if another video-conference meeting were held, she would attend only because she had to report to the school staff, but she would not participate in the meeting.

4. *Recommendations for Using Video Conferencing to Facilitate Committee Meetings*

Video conferencing can be a beneficial way to hold meetings, especially when there are large distances to travel. As well, during the winter months, when there are concerns about weather and personal safety, video conferencing is a positive alternative to traditional meetings.

Careful advanced preparation is needed to ensure meeting success. This involves printing and distributing meeting material ahead of time and having technical support staff on hand to deal with technical difficulties.

Participants at video-conference meetings require an orientation session to learn how to use the equipment and to clarify meeting procedures. If properly handled, this orientation should increase participants' comfort level with the technology. It is highly recommended that meeting protocols be developed to facilitate participation and effective use of time.

Though video conferencing might be a valuable tool for conveying information, it does not address the personal and social needs of committee members. Teachers look forward to the collegiality of meetings, especially when they are isolated by geography. For this reason organizations should use video conferencing only when the circumstances warrant.

VIII. Conclusions

One of the primary purposes of educational action research is to effect positive change in the professional practice of educators. The nature of action research requires that the research design focus on a question or set of questions that are of immediate relevance to the daily practice of the project's participants. The knowledge gained from such projects may then be disseminated to the larger community of practitioners, who may benefit by applying the best practices emanating from the research to their own practice. And, unlike the theoretical emphasis of formal research, the knowledge gained from action research is designed for practical applications to specific and immediate situations.

Glanz (1998) identifies six steps in the action-research process: (1) deciding on a focus, (2) collecting data, (3) analyzing and interpreting data, (4) taking action, (5) reflecting and (6) continuing or modifying one's actions, which in turn leads to a new focus for another round of action research. The final sections of this report discuss the significant factors that influenced this study and offer recommendations based on the project's research findings. Finally, this report considers the lessons learned from the project and makes recommendations for subsequent action-research projects with a focus on continuous professional development for the Fort Vermilion School District.

A. Major Factors Influencing the Project

1. Access

Several factors related to access to the resources used in the project are outlined below:

a) Internet access from home

Because all the resources used in the project are Internet-based, participants must have Internet both at school and at home. Participants without computer systems that supported these types of communication were limited in their ability to fully participate in the project.

Recommendation 1: That teachers, especially beginning teachers, be provided with funds to purchase a computer system with Internet access.

b) System maintenance

As part of its technical operations, the Fort Vermilion School District's IT department has a regularly scheduled system backup during low-use periods (11:00 PM–6:00 AM), which some participants found interfered with their use of the system.

Recommendation 2: That teachers be informed of the district's system maintenance schedule so that they can work around those times.

c) Privacy

The public nature of the SharePoint discussion forums resulted in the reluctance of some members to fully participate in the discussions. Some felt that school and district administrators might have access to the discussion forums, and therefore they were hesitant to disclose any information that could have been detrimental to them.

Recommendation 3: That a list of the members who have access to the SharePoint site be published on the site.

2. *Instructional Activity*

The school year is characterized by different types of instructional activity, and site usage is dependent on teachers' pedagogical needs. Therefore, usage and the types of resources accessed will vary throughout the year. For example, preparation activities, such as searching for lesson resources and ideas, are most intense at the start of the school year. The current study was conducted in the spring, so usage of the various capabilities of the site will reflect the needs of educators at that time.

Website usage may be analyzed using Microsoft Windows SharePoint site usage statistics services. Participants' interactions with site content should be tracked throughout the year and analyzed to identify the most and least used. This would help guide future development of Web content and ensure that it is both relevant and timely.

Recommendation 4: That statistics on site usage be based on time of year.

3. *Human–Computer Interaction*

a) Participants' comfort level

Some participants did not like being shown on a video screen.

Sometimes, participants could not hear the speaker, but they were reluctant to interrupt to request clarification. Instead, participants would ask others for clarification. This led to disruptive sidebar conversations that were picked up by the video-conferencing audio equipment. Another factor related to etiquette was the tendency of some participants to dominate the conversations. Finally, participants

commented negatively on the lack of face-to-face interaction. For some, the opportunity to collaborate is a valued opportunity to foster social relationships that are hindered by the remoteness of some of the communities in the district. The virtual presence of colleagues lacked the nuance and immediacy of being in the presence of another person.

Recommendation 5: That personal discomfort be managed by providing an initial orientation or inservice to establish protocols for video conferencing. It is further strongly recommended that these video sessions be facilitated and the protocols be followed. While video conferencing may be a viable alternative to deal with geography and weather, virtual meetings are incapable of replicating the social nuances of face-to-face interaction. Therefore, in addition to video conferencing, it is recommended that a professional development program ensure that personal contacts and social interaction still occur.

4. *Social Factors*

a) Labour unrest

A period of labour unrest that resulted in a strike vote in the district coincided with the launch of the SharePoint websites. The tensions surrounding the labour dispute created a climate of dissatisfaction with the district and with projects that were perceived to benefit the district. This may have adversely affected the level of participation, because the project required voluntary participation. Furthermore, the stress of the labour dispute and the disinclination to work with district-sponsored projects undoubtedly affected the results of this study. This was particularly problematic because action-research projects in education require collaborative efforts.

Recommendation 6: That data on the political climate of a district be collected prior to initiating a project, and that the research team take proactive measures to address concerns, clarify misperceptions and compensate for an unfavourable climate.

5. *Communication Factors*

a) Protocols

A number of communication issues affected the study; specifically, a lack of protocols for the various communication mechanisms used in the project (ie, e-mail, SharePoint content, forums) was problematic. This includes protocols that specify

- who has access to the SharePoint sites,
- website content guide (define the scope and subject matter) and
- forum content guide (define the scope and subject matter).

Recommendation 7: That protocols that address the above bulleted items be established and maintained.

b) Communication plan

A comprehensive communication plan should be part of the overall strategic plan. A communication plan identifies project stakeholders, communication needs and methods of communication, and ensures that everyone who needs to be informed about project activities and results receives the necessary information. The plan should identify the stakeholders, information needs (what must be communicated) and communication methods (reports, documentation, e-mail and websites).

Recommendation 8: That the committee recognize a need for a strategic communication plan with two broad purposes: (1) to serve as a marketing tool to promote and maintain interest in the project among district members, and (2) as a mechanism for keeping the stakeholders and those interested in the project apprised of the project's development.

The communication plan should

- identify the target audience,
- identify the key purposes of the various communications,
- establish a communication schedule and
- determine the method of communication (for example, reports to local and administrative council, district newsletters).

IX. General Recommendations (Lessons Learned)

1. Design workshop to suit the video-conferencing medium.
2. Encourage a minimum of two or three people per video-conferencing suite to encourage participation.
3. Teach all school staff how to use the video equipment.
4. Ensure that all SharePoint postings that refer to updated content include a hyperlink to that content.
5. Establish and maintain communication protocols to ensure appropriate use of the system.
6. Ensure that moderators regularly update content (every one to two weeks) to maintain interest and encourage participation.
7. Ensure that SharePoint content is relevant to teachers' needs and the school cycle (for example, seasonally relevant content, parent–teacher information).
8. Ensure that SharePoint inservice includes a caveat that the site is not private and that the public can access the site.

X. Suggestions for Future Research

Though the technology-based strategies for professional development focused district teachers' needs, a needs assessment instrument included both support and administrative staff. The results of the initial needs assessment indicated that although the PD needs of these subgroups would be different, opportunities for similar use of technology to support professional development should be explored. Therefore, it is recommended that subsequent projects focus on the role of technology to support the professional development needs of both support and administrative staff in the Fort Vermilion School District.

XI. Bibliography

Alberta Teachers' Association (ATA). 2005. *A Guide to Comprehensive Professional Development Planning.* Edmonton, Alta: ATA.

Allen, R. 2004. "Sustaining Professional Development—Collaboration and Technology Reshape Training." *Education Update* 46, no 2: 6–8.

Boak, C, and J Blackburn. 1998. *So, You Want to Host an Online Conference…*, Office of Learning Technologies Human Resources Development Canada. p 36.

Cook, C J, and C Fine. 1997. *Critical Issue: Finding Time for Professional Development*. www.ncrel.org/sdrs/areas/issues/educatrs/profdevl/pd300.htm (accessed 2006 10 24).

Dufour, R, and R Eaker. 1998. *Professional Learning Communities*. Bloomington, Ind: National Education Service.

Ferris, P. 1997. "What Is CMC? An Overview of Scholarly Definitions." *CMC Magazine* (January). www.december.com/cmc/mag/1997/jan/ferris.html (accessed 2006 10 24).

Fullan, M. 2001. *Leading in a Culture of Change*. San Francisco: Jossey-Bass.

Glanz, J. 1998. *Action Research: An Educational Leader's Guide to School Improvement*. Norwood, Mass: Christopher Gordon.

Government of Alberta. nd. *Alberta SuperNet News.*

Guskey, T R. 1998. "The Age of Accountability" *Journal of Staff Development*, 19 no 4.

Hall, T. 2002. *Differentiated Instruction*. Wakefield, Mass. National Center on Accessing the General Curriculum.

Hickey, A. 2004. "Knowledge." *The Bulletin: Newfoundland and Labrador Teachers' Association* 47, no 8: 24–25.

Koufman-Frederick, A M Lillie, L Pattison-Gordon, D L Watt and R Carter. 1999. *Electronic Collaboration: A Practical Guide for Educators*. Providence, RI: Northeast and Islands Regional Laboratory at Brown University. www.alliance.brown.edu/pubs/collab/elec-collab.pdf (accessed 2006 10 24).

Langer, G M, A B Colton and L S Goff. 2003. *Collaborative Analysis of Student Work: Improving Teaching and Learning*. Alexandria, VA: Association for Supervision and Curriculum Development.

Little, J W. 1992. "Teachers' Professional Development in a Climate of Educational Reform." *Educational Evaluation and Policy Analysis*, 12 no 2: 129–51.

Ormrod, J E. 2004. *Human Learning*. Upper Saddle River, NJ: Merrill.

Pasquarelli, S. 2004. "Collaborative Analysis of Student Work: Improving Teaching and Learning." *Teachers College Record*, 106, no 5, 1026–29.

Reese, S. 2005. "The Changing Face of CTE: An Education in Diversity." *Techniques: Connecting Education and Careers* 80, no 7: 14–17.

Roberts, S M, and E Z Pruitt. 2003. *Schools as Professional Learning Communities*. Thousand Oaks, Calif: Corwin.

Sparks, D, and S Loucks-Horsley. 1990. *Five Models of Staff Development*. Oxford, Ohio: National Staff Development Council.

Vygotsky, L S. 1978. *Mind in Society*. Cambridge, Mass: Harvard University Press.

Appendix A

Needs Assessment Survey Findings

PART I

In Section A, Topic Areas That Will Benefit You in Your Current Assignment, respondents ranked the 25 choices from highest to lowest as follows:

Question A. Topic Areas That Will Benefit You in Your Current Assignment

I. Teachers

Rank	Q#.	Item	Mean
1.	A1.	Content-Subject Specific	4.3
2.	A2.	Effective Teaching Practices	4.0
3.	A4.	Assessment (effective/alternate ways to assess student progress)	3.9
4.	A14.	Differentiated Instruction	3.7
5.	A6.	Classroom Integration of Technology	3.5
5.	13.	Share Sessions for Classroom Strategies/Activities	3.5
5.	A21.	Special Needs Issues	3.5
5.	A5.	Using Instructional Technology (word processing, graphic tools, scanner, etc)	3.5
6.	A3.	Discipline Management	3.3
6.	A22.	First Aid and CPR	3.3
6.	A7.	Personal Professional Development (time management, stress reduction)	3.3
7.	A24.	Current Educational Innovations and Issues	3.2
7.	A9.	Leadership Development	3.2
8.	A12.	Conflict Resolution	3.1
8.	A23.	Graduate-Level Courses	3.1
8.	A20.	Innovative Uses of Technology for PD	3.1
8.	A8.	Parent Communication/Conferencing	3.1
8.	A16.	Peer Mentoring/Tutoring	3.1
9.	A25.	Sources for Grants	3.0
10.	A17.	Crisis Planning/Intervention	2.9
10.	A18.	Professional Rights, Responsibilities and Ethics	2.9
11.	A11.	Communication and Interpersonal Relations	2.8
11.	A10.	Curriculum Mapping	2.8

Rank	Q#.	Item	Mean
12.	A15.	Project Management	2.7
13.	A19.	Administrative Planning (PD, school improvement, data analysis)	2.5

II. Support Staff

Rank	Q#.	Item	Mean
1.	A22.	First Aid and CPR	4.0
2.	A1.	Content-Subject Specific	3.8
2.	A13.	Share Sessions for Classroom Strategies/Activities	3.8
3.	A3.	Discipline Management	3.6
3.	A2.	Effective Teaching Practices	3.6
3.	A21.	Special Needs Issues	3.6
4.	A12.	Conflict Resolution	3.5
4.	A17.	Crisis Planning/Intervention	3.5
4.	A9.	Leadership Development	3.5
5.	A16.	Peer Mentoring/Tutoring	3.4
5.	A7.	Personal Professional Development (time management, stress reduction)	3.4
5.	A18.	Professional Rights, Responsibilities and Ethics	3.4
6.	A11.	Communication and Interpersonal Relations	3.3
7.	A4.	Assessment (effective/alternate ways to assess student progress)	3.2
7.	A5.	Using Instructional Technology (word processing, graphic tools, scanner, etc)	3.2
8.	A6.	Classroom Integration of Technology	3.1
9.	A20.	Innovative Uses of Technology for PD	3.0
10.	A14.	Differentiated Instruction	2.9
10.	A23.	Graduate-Level Courses	2.9
11.	A24.	Current Educational Innovations and Issues	2.8
11.	A15.	Project Management	2.8
12.	A19.	Administrative Planning (PD, school improvement, data analysis)	2.7
12.	A8.	Parent Communication/Conferencing	2.7
12.	A25.	Sources for Grants	2.7
13.	A10.	Curriculum Mapping	2.3

III. Administrators

Rank	Q#.	Item	Mean
1.	A19.	Administrative Planning (PD, school improvement, data analysis)	4.4
2.	A9.	Leadership Development	4.3
3.	A4.	Assessment (effective/alternate ways to assess student progress)	4.2
4.	A2.	Effective Teaching Practices	3.9
5.	A14.	Differentiated Instruction	3.6
5.	A3.	Discipline Management	3.6
6.	A20.	Innovative Uses of Technology for PD	3.5
7.	A12.	Conflict Resolution	3.4
7.	A24.	Current Educational Innovations and Issues	3.4
7.	A21.	Special Needs Issues	3.4
8.	A6.	Classroom Integration of Technology	3.3
8.	A5.	Using Instructional Technology (word processing, graphic tools, scanner, etc)	3.3
9.	A1.	Content-Subject Specific	3.2
9.	A17.	Crisis Planning/Intervention	3.2
9.	A10.	Curriculum Mapping	3.2
9.	A23.	Graduate-Level Courses	3.2
9.	A7.	Personal Professional Development	3.2
9.	A13.	Share Sessions for Classroom Strategies/Activities	3.2
10.	A11.	Communication and Interpersonal Relations	3.1
10.	A15.	Project Management	3.1
11.	A16.	Peer Mentoring/Tutoring	3.0
11.	A18.	Professional Rights, Responsibilities and Ethics	3.0
12.	A22.	First Aid and CPR	2.9
12.	A8.	Parent Communication/Conferencing	2.9
13.	A25.	Sources for Grants	2.8

In Section B, Preferences of Delivery Format, respondents ranked the 21 choices from highest to lowest as follows:

Question B. Preferences of Delivery Format

I. Teachers

Rank	Q#.	Item	Mean
1.	B2.	Active Hands-On Participation	4.2
2.	B11.	Face-to-Face Teacher Collaboration Activities	4.0
2.	B9.	Within-District Workshops or Inservices	4.0
3.	B1.	Instructor Led	3.7
3.	B12.	Receiving Mentoring, Coaching, Lead Teaching or Observation	3.7
4.	B13.	Teacher Resource Centre	3.5
5.	B10.	Out-of-District Workshops or Inservices	3.4
6.	B6.	Computer-Based Learning (online learning/e-PD)	3.3
6.	B19.	National/Regional/Local Conferences	3.3
7.	B18.	College or University Courses	3.2
7.	B21.	On-the-Job Training	3.2
8.	B16.	Independent Learning (reading, surfing)	3.1
8.	B7.	Self-Paced Tutorial	3.1
9.	B5.	Interactive Distance Learning (video suites, teleconferencing)	3.0
9.	B20.	Team Teaching	3.0
9.	B15.	Web Page Resources	3.0
10.	B8.	Site or School Visitations	2.9
10.	B1.	Technology-Based Collaboration (forums, chat lines, audio graphic software, e-mail)	2.9
11.	B3.	Immersion or Internship Activities (being a TA)	2.8
12.	B4.	Independent Action Research or Projects	2.7
13.	B14.	Committees or Task Forces	2.5

II. Support Staff

Rank	Q#.	Item	Mean
1.	B2.	Active Hands-On Participation	4.4
2.	B1.	Instructor Led	4.0
2.	B9.	Within-District Workshops or Inservices	4.0
3.	B21.	On-the-Job Training	3.9
4.	B3.	Immersion or Internship Activities (being a TA)	3.6
4.	B19.	National/Regional/Local Conferences	3.6
5.	B10.	Out-of-District Workshops or Inservices	3.4
6.	B18.	College or University Courses	3.3
6.	B6.	Computer-Based Learning (online learning/e-PD)	3.3
6.	B5.	Interactive Distance Learning (video suites, teleconferencing)	3.3
6.	B7.	Self-Paced Tutorial	3.3
6.	B8.	Site or School Visitations	3.3
6.	B20.	Team Teaching	3.3
7.	B11.	Face-to-Face Teacher Collaboration	3.2
7.	B16.	Independent Learning (reading, surfing)	3.2
7.	B13.	Teacher Resource Centre	3.2
7.	B17.	Technology-Based Collaboration (forums, chat lines, audio graphic software, e-mail)	3.2
8.	B12.	Receiving Mentoring, Coaching, Lead Teaching or Observation	3.1
9.	B14.	Committees or Task Forces	3.0
9.	B15.	Web Page Resources	3.0
10.	B4.	Independent Action Research or Projects	2.9

III. Administrators

Rank	Q#.	Item	Mean
1.	B1.	Instructor Led	4.3
2.	B11.	Face-to-Face Teacher Collaboration	4.2
3.	B2.	Active Hands-On Participation	3.9
4.	B9.	Within-District Workshops or Inservices	3.7
5.	B18.	College or University Courses	3.5
6.	B10.	Out-of-District Workshops or Inservices	3.4
6.	B12.	Receiving Mentoring, Coaching, Lead Teaching or Observation	3.4

Rank	Q#.	Item	Mean
7.	B21.	On-the-Job Training	3.3
8.	B13.	Teacher Resource Centre	3.2
8.	B20.	Team Teaching	3.2
9.	B19.	National/Regional/Local Conferences	3.1
9.	B8.	Site or School Visitations	3.1
10.	B6.	Computer-Based Learning (online learning/e-PD)	2.8
11.	B14.	Committee or Task Forces	2.7
11.	B3.	Immersion or Internship Activities (being a TA)	2.7
11.	B16.	Independent Learning (reading, surfing)	2.7
11.	B15.	Web Page Resources	2.7
12.	B4.	Independent Action Research or Projects	2.6
12.	B5.	Interactive Distance Learning (video suites, teleconferencing)	2.6
12.	B17.	Technology-Based Collaboration (forums, chat lines, audio graphic software, e-mail)	2.6
13.	B7.	Self-Paced Tutorial	2.5

In Section C, Preferred Time for Professional Development Delivery, respondents ranked the 10 choices from highest to lowest as follows:

Question C. Preferred Time for Professional Development Delivery

I. Teachers

Rank	Q#.	Item	Mean
1.	C2.	School calendar days (scheduled inservice days during the school year)	4.2
2.	C6.	During schools hours (subs hired)	3.9
3.	C10.	Anytime, anywhere online learning opportunities	3.4
4.	C1.	School calendar days (before first day for students)	3.3
5.	C5.	Immediately after school	2.6
6.	C9.	Evenings	2.3
7.	C8.	Prep time	2.2
8.	C4.	Summer	1.9
8.	C3.	Weekends	1.9
9.	C7.	Before school in the mornings	1.6

II. Support Staff

Rank	Q#.	Item	Mean
1.	C2.	School calendar days (scheduled inservice days during the school year)	4.1
2.	C6.	During schools hours (subs hired)	3.4
2.	C1.	School calendar days (before first day for students)	3.4
3.	C10.	Anytime, anywhere online learning opportunities	3.0
4.	C5.	Immediately after school	2.7
4.	C8.	Prep time	2.7
5.	C9.	Evenings	2.2
5.	C3.	Weekends	2.2
6.	C7.	Before school in the mornings	2.0
7.	C4.	Summer	1.6

III. Administrators

Rank	Q#.	Item	Mean
1.	C1.	School calendar days (before first day for students)	4.0
2.	C2.	School calendar days (scheduled inservice days during the school year)	3.9
3.	C6.	During school hours (subs hired)	3.4
4.	C10.	Anytime, anywhere online learning opportunities	2.7
5.	C4.	Summer	2.4
6.	C5.	Immediately after school	2.2
7.	C3.	Weekends	2.0
8.	C9.	Evenings	1.9
9.	C8.	Prep time	1.7
10.	C7.	Before school in the mornings	1.6

In Section D, Preferred Location for Professional Development Delivery, respondents ranked the six choices from highest to lowest as follows:

Question D. Preferred Location for Professional Development Delivery

I. Teachers

Rank	Q#.	Item	Mean
1.	D2.	At your worksite	4.4
2.	D3.	Off-site within district	3.4
3.	D1.	Central administration building	3.3
4.	D5.	Distance learning (anytime, anywhere)	3.2
4.	D6.	Web based (anytime, anywhere)	3.2
5.	D4.	Out of district	2.9

II. Support Staff

Rank	Q#.	Item	Mean
1.	D2.	At your worksite	4.2
2.	D1.	Central administration building	3.4
3.	D3.	Off-site within district	3.3
4.	D6.	Web based (anytime, anywhere)	3.2
5.	D5.	Distance learning (anytime, anywhere)	3.1
6.	D4.	Out of district	2.8

III. Administrators

Rank	Q#.	Item	Mean
1.	D2.	At your worksite	4.1
2.	D1.	Central administration building	3.7
3.	D4.	Out of district	3.4
4.	D3.	Off-site within district	3.3
5.	D6.	Web based (anytime, anywhere)	2.6
6.	D5.	Distance learning (anytime, anywhere)	2.5

In Section E, Preferred Method of Notification of Professional Development Activities and Learning Opportunities, respondents ranked the 10 choices from highest to lowest as follows:

Question E. Preferred Method of Notification of Professional Development Activities and Learning Opportunities

I. Teachers

Rank	Q#.	Item	Mean
1.	E7.	E-mail, listserv, forum communications	4.2
2.	E4.	Announcements from administrator or supervisor	3.9
3.	E1.	Notices mailed from school or school district	3.8
4.	E10.	Notices from facilitators and leader teachers	3.7
5	E8.	Notices mailed from your Association	3.6
6.	E2.	Notices mailed from companies or professional organizations	3.2
7.	E9.	Notices posted on the bulletin board	3.1
8.	E6.	Notices placed on Internet websites	3.0
8.	E5.	Word of mouth from colleagues and other school employees	3.0
9.	E3.	Advertisements in magazines, journals and newsletters	2.4

II. Support Staff

Rank	Q#.	Item	Mean
1.	E4.	Announcements from administrator or supervisor	4.3
2.	E1.	Notices mailed from school or school district	4.0
3.	E7.	E-mail, listserv, forum communications	3.7
4.	E8.	Notices mailed from your Association	3.4
5.	E10.	Notices from facilitators and lead teachers	3.3
5.	E2.	Notices mailed from companies or professional organizations	3.3
6.	E5.	Word of mouth from colleagues and other school employees	3.2
7.	E9.	Notices posted on the bulletin board	3.1
8.	E6.	Notices placed on Internet websites	2.6
9.	E3.	Advertisements in magazines, journals and newsletters	2.4

III. Administrators

Rank	Q#.	Item	Mean
1.	E4.	Announcements from administrator or supervisor	4.1
2.	E10.	Notices from facilitators and lead teachers	3.9
2.	E1.	Notices mailed from school or school district	3.9
3.	E7.	E-mail, listserv, forum communications	3.3
3.	E8.	Notices mailed from your Association	3.3
4.	E5.	Word of mouth from colleagues and other school employees	3.0
5.	E2.	Notices mailed from companies or professional organizations	2.9
6.	E6.	Notices placed on Internet websites	2.8
6.	E9.	Notices posted on the bulletin board	2.8
7.	E3.	Advertisements in magazines, journals and newsletters	2.3

In Section F, Obstacles to Your Participation in Professional Development Opportunities, respondents ranked the 13 choices from highest to lowest as follows:

Question F: Obstacles to Your Participation in Professional Development Opportunities

I. Teachers

Rank	Q#.	Item	Mean
1.	F13.	Weather, travel conditions, distance to travel	3.6
2.	F3.	Lack of personal time for attendance/study	3.5
2.	F2.	No/difficult substitute coverage	3.5
2.	F1.	Too much time out of work	3.5
3.	F6.	Lack of quality courses or workshops	3.4
3.	F5.	PD offered at inconvenient locations	3.4
3.	F4.	PD offered at inconvenient times	3.4
4.	F7.	Lack of relevant courses or workshops	3.3

5.	F10.	Lack of funding to attend PD programs	2.8
6.	F9.	Administration seeks to control PD activities	2.2
6.	F8.	Lack of support or encouragement from administration	2.2
7.	F12.	No room left in workshop	2.1
8.	F11.	Family issues (child care, etc)	2.0

II. Support Staff

Rank	Q#.	Item	Mean
1.	F7.	Lack of relevant courses or workshops	3.8
2.	F13.	Weather, travel conditions, distance to travel	3.6
3.	F6.	Lack of quality courses or workshops	3.4
4.	F10.	Lack of funding to attend PD program	3.1
4.	F5.	PD offered at inconvenient locations	3.1
5.	F4.	PD offered at inconvenient times	3.0
6.	F3.	Lack of personal time for attendance/study	2.7
6.	F2.	No/difficult substitute coverage	2.7
6.	F1.	Too much time out of work	2.7
7.	F11.	Family issues (child care, etc)	2.6
7.	F8.	Lack of support or encouragement from administration	2.6
8.	F9.	Administration seeks to control PD activities	2.4
9.	F12.	No room left in workshop	1.8

III. Administrators

Rank	Q#.	Item	Mean
1.	F1.	Too much time out of work	4.0
2.	F3.	Lack of personal time for attendance/study	3.8
2.	F2.	No/difficult substitute coverage	3.8
3.	F6.	Lack of quality courses or workshops	3.5
4.	F7.	Lack of relevant courses or workshops	3.3
4.	F4.	PD offered at inconvenient locations	3.3
4.	F5.	PD offered at inconvenient times	3.3
5.	F10.	Lack of funding to attend PD programs	2.8
6.	F13.	Weather, travel conditions, distance to travel	2.7
7.	F11.	Family issues (child care, etc)	2.5
8.	F9.	Administration seeks to control PD activities	2.3
9.	F8.	Lack of support or encouragement from administration	2.1
10.	F12.	No room left in workshop	1.8

In Section G, Technology Skill Level—Teaching Comfort, respondents ranked the 15 choices from highest to lowest as follows:

Question G. Technology Skill Level—Teaching Comfort

I. Teachers

Rank	Q#.	Item	Mean
1.	G8.	E-mail	4.1
1.	G1.	Word processing (Word)	4.1
2.	G11.	Internet skills (online databases, student research)	3.5
3.	G14.	Aware of and understand network use policy, ethics in computer use	3.2
3.	G2.	Presentation software (PowerPoint)	3.2
4.	G9.	Drill/practice programs (UltraKey, Math Factory)	3.0
5.	G13.	Utilizing peripherals effectively (scanner, printers, projectors, sound systems, CD burners, etc)	2.8
6.	G5.	Desktop publishing (Publisher)	2.7
6.	G10.	Graphical applications (PhotoShop, Paint)	2.7
7.	G15.	Listservs, chats, forums, bulletin boards	2.6
8.	G6.	Concept mapping (Inspiration)	2.5
8.	G3.	Spreadsheets (Excel)	2.5
9.	G7.	Website design (FrontPage, HTML)	2.2
10.	G4.	Database (Access)	2.1
11.	G12.	Video editing (Pinnacle, Movie Maker, Avio)	1.9

II. Support Staff

Rank	Q#.	Item	Mean
1.	G8.	E-mail	3.4
2.	G1.	Word processing (Word)	3.1
3.	G11.	Internet skills (online databases, student research)	2.8
4.	G14.	Aware of and understand network use policy, ethics in computer use	2.5
4.	G10.	Graphical applications (PhotoShop, Paint)	2.5
5.	G5.	Desktop publishing (Publisher)	2.4
6.	G13.	Utilizing peripherals effectively (scanner, printers, projectors, sound systems, CD burners, etc)	2.1
7.	G15.	Listservs, chats, forums, bulletin boards	1.9
7.	G3.	Spreadsheets (Excel)	1.9
8.	G9.	Drill/practice programs (UltraKey, Math Factory)	1.8
8.	G2.	Presentation software (PowerPoint)	1.8

9.	G4.	Database (Access)	1.6
10.	G12.	Video editing (Pinnacle, Movie Maker, Avio)	1.5
10.	G7.	Website design (FrontPage, HTML)	1.5
11.	G6.	Concept mapping (Inspiration)	1.3

III. Administrators

Rank	Q#.	Item	Mean
1.	G1.	Word processing (Word)	4.2
2.	G8.	E-mail	3.9
3.	G14.	Aware of and understand network use policy, ethics in computer use	3.6
3.	G2.	Presentation software (PowerPoint)	3.6
4.	G11.	Internet skills (online databases, student research)	3.3
5.	G3.	Spreadsheets (Excel)	3.1
6.	G5.	Desktop publishing (Publisher)	2.9
7.	G9.	Drill/practice programs (UltraKey, Math Factory)	2.8
8.	G13.	Utilizing peripherals effectively (scanner, printers, projectors, sound systems, CD burners, etc)	2.7
9.	G4.	Database (Access)	2.5
10.	G10.	Graphical applications (Photoshop, Paint)	2.4
11.	G7.	Website design (FrontPage, HTML)	2.1
12.	G15.	Listservs, chats, forums, bulletin boards	2.0
13.	G6.	Concept mapping (Inspiration)	1.9
14.	G12.	Video editing (Pinnacle, Movie Maker, Avio)	1.4

In Section H, Technology Skill Level—Personal Comfort, respondents ranked the 17 choices from highest to lowest as follows:

Question H. Technology Skill Level—Personal Comfort

I. Teachers

Rank	Q#.	Item	Mean
1.	H8.	E-mail	4.5
1.	H1.	Word processing (Word)	4.5
2.	H11.	Internet skills (online databases, teacher research)	3.6
3.	H2.	Presentation software (PowerPoint)	3.3
4.	H16.	Aware of and understand network use policy, ethics in computer use	3.2
4.	H9.	Drill/practice programs (UltraKey, Math Factory)	3.2
4.	H13.	Integrating technology into instruction/content area	3.2
5.	H12.	Administrative classroom application software (Gradebook Plus, Sirs)	3.1
6.	H5.	Desktop publishing (Publisher)	2.8
6.	H10.	Graphical applications (PhotoShop, Paint)	2.8
6.	H15.	Utilizing peripherals effectively (scanner, printers, projectors, sound systems, CD burners, etc)	2.8
7.	H3.	Spreadsheets (Excel)	2.7
8.	H6.	Concept mapping (Inspiration)	2.6
9.	H17.	Listservs, chats, forums, bulletin boards	2.4
10.	H7.	Website design (FrontPage, HTML)	2.3
11.	H4.	Database (Access)	2.0
12.	H14.	Video editing (Pinnacle, Movie Maker, Avio)	1.8

II. Support Staff

Rank	Q#.	Item	Mean
1.	H8.	E-mail	4.2
2.	H1.	Word processing (Word)	3.7
3.	H16	Aware of and understand network use policy, ethics in computer use	2.8
4.	H10	Graphical applications (PhotoShop, Paint)	2.7
5.	H11.	Internet skills (online databases, student research)	2.6
5.	H15.	Utilizing peripherals effectively (scanner, printers, projectors, sound systems, CD burners, etc)	2.6
6.	H5.	Desktop publishing (Publisher)	2.4
7.	H2.	Presentation software (PowerPoint)	2.2

8.	H3.	Spreadsheets (Excel)	2.1
9.	H12.	Administrative classroom application software (GradeBook Plus, Sirs)	2.0
9.	H9.	Drill/practice programs (UltraKey, Math Factory)	2.0
10.	H17.	Listservs, chats, forums, bulletin boards	1.7
10.	H7.	Website design (FrontPage, HTML)	1.7
11.	H4.	Database (Access)	1.6
11.	H13.	Integrating technology into instruction/content area	1.6
11.	H14.	Video editing (Pinnacle, Movie Maker, Avio)	1.6
12.	H6.	Concept mapping (Inspiration)	1.3

III. Administrators

Rank	Q#.	Item	Mean
1.	H1.	Word processing (Word)	4.5
2.	H8.	E-mail	4.4
3.	H2.	Presentation software (PowerPoint)	3.9
4.	H16.	Aware of and understand network use policy, ethics in computer use	3.7
5.	H13.	Integrating technology into instruction/content area	3.6
5.	H11.	Internet skills (online databases, student research)	3.6
6.	H12.	Administrative classroom application software (GradeBook Plus, Sirs)	3.3
6.	H3.	Spreadsheets (Excel)	3.3
7.	H5.	Desktop publishing (Publisher)	3.2
8.	H10.	Graphical applications (PhotoShop, Paint)	2.9
9.	H9.	Drill/practice programs (UltraKey, Math Factory)	2.8
10.	H4.	Database (Access)	2.6
10.	H15.	Utilizing peripherals effectively (scanner, printers, projectors, sound systems, CD burners, etc)	2.6
11.	H6.	Concept mapping (Inspiration)	2.5
12.	H17.	Listservs, chats, forums, bulletin boards	2.3
12.	H7.	Website design (FrontPage, HTML)	2.3
13.	H14.	Video editing (Pinnacle, Movie Maker, Avio)	1.6

Appendix B

Questions Posed to Participants About Their Home Computer Use

Question I. About You—Personal Home Computer Use

I. Teachers

Rank	Q#.	Item	Yes (%)
1.	I1.	Do you own a personal computer?	81.0
2.	I5.	Would you take advantage of PD opportunities that could be accessed from home?	64.0
3.	I4.	Do you access teacher resource websites like 2Learn and the ATA website on a regular basis? (through school or home)	61.0
4.	I2.	Does it [your personal computer] have compatible software to the school?	60.0
5.	I3.	Do you use your home computer more than seven hours a week?	50.0
6.	I8.	Would you be interested in becoming involved in learning how to design and moderate online professional development opportunities?	41.0
7.	I6.	Are you presently involved in or have you taken advantage of online PD through school venues or from your home computer?	38.0
8.	I7.	Have you been part of or used a listserv, chat line or forum?	29.0

II. Support Staff

Rank	Q#.	Item	Yes (%)
1.	I1.	Do you own a personal computer?	71.0
2.	I2.	Does it have compatible software to the school?	62.0
3.	I5.	Would you take advantage of PD opportunities that could be accessed from home?	47.0
4.	I8.	Would you be interested in becoming involved in learning how to design and moderate online professional development opportunities?	45.0
5.	I3.	Do you use your home computer more than seven hours a week?	23.0

Rank	Q#.	Item	Yes (%)
6.	I7.	Have you been part of or used a listserv, chat line or forum?	21.0
7.	I6.	Are you presently involved in or have you taken advantage of online PD through school venues or from your home computer?	20.0
8.	I4.	Do you access teacher resource websites like 2Learn and the ATA website on a regular basis? (through school or home)	16.0

III. Administrators

Rank	Q#.	Item	Yes (%)
1.	I1.	Do you own a personal computer?	88.0
2.	I2.	Does it have compatible software to the school?	75.0
3.	I5.	Would you take advantage of PD opportunities that could be accessed from home?	71.0
4.	I8.	Would you be interested in becoming involved in learning how to design and moderate online professional development opportunities?	59.0
5.	I4.	Do you access teacher resource websites like 2Learn and the ATA website on a regular basis? (through home or school)	56.0
6.	I3.	Do you use your home computer more than seven hours a week?	50.0
7.	I6.	Are you presently involved in or have you taken advantage of online PD through school venues or from your home computer?	41.0
8.	I7.	Have you been part of or used a listserv, chat line or forum?	35.0

Appendix C

Teachers Indicated They Wanted to Learn About New Instructional and Assessment Strategies

A. Please Mark Each Item to Rank Order Topic Areas That Will Benefit You in Your Current Assignment.

Q.A1—Content–Subject Specific

Group	Mean
1. Teachers (n=94)	4.3
2. Support Staff (n=27)	3.8
3. Administrators (n=15)	3.2

Q.A2—Effective Teaching Practices

Group	Mean
1. Teachers (n=92)	4.0
2. Admin (n=15)	3.9
3. Support Staff (n=31)	3.6

Q.A3—Discipline Management

Group	Mean
1. Support Staff (n=29)	3.6
1. Administrators (n=15)	3.6
2. Teachers (n=97)	3.3

Q.A4—Assessment (Effective/Alternate Ways to Assess Student Progress)

Group	Mean
1. Administrators (n=16)	4.2
2. Teachers (n=97)	3.9
3. Support Staff (n=26)	3.2

Q.A5—Using Instructional Technology (Word Processing, Graphic Tools, Scanner, etc)

Group	**Mean**
1. Teachers (n=97)	3.5
2. Administrators (n=15)	3.3
3. Support Staff (n=25)	3.2

Appendix D-1

A Plan to Facilitate the Work of a Team on a Specific Project (Math CASL Groups)

Subcommittee member: Marj Farris

Strategy	Resources Required	Date Initiated	Date Completed	Outcome of Action
Research a teacher collaboration process	Copies of the book for each member of the committee *Collaborative Analysis of Student Work: Improving Teaching and Learning* (Langer, Colton and Goff 2003) Small group of principals, AISI coordinators, assistant superintendent	Oct 2003	Dec 2003	Chose the CASL process
Training for the CASL process	AISI funding for trip to train with the developers of the CASL process (3 principals, 1 vice-principal, 2 AISI coordinators, 1 assistant superintendent, 8 classroom teachers)	Feb 2004	Feb 2004	Planned for 3 school-based pilot projects Planned for 1 video-conferencing pilot project
Set up a pilot project of senior high school mathematics teachers	E-mail Staff lists	Mar 2004	Mar 2004	E-mails sent to all senior high mathematics teachers providing them with a general overview of the project and inviting them to the introductory meeting
Initial introductory meeting of CASL group	Release time for the teachers for the meeting	Mar 2004	Mar 2004	To identify participants, develop norms for the project, set up timelines, and expectations 9 people attended Participants divided into 2 groups of 4 (including 1 student teacher). One person opted out of the project.
Year-end survey	E-mail	May 2004	May 2004	Data used to evaluate and improve the process for the following year

Strategy	Resources Required	Date Initiated	Date Completed	Outcome of Action
Divisionwide CASL introduction		Aug 2004	Aug 2004	Give all the teachers in the school division an overview of all the CASL projects, including the Video Conferencing Math Project
Expand the pilot project to include junior high mathematics teachers	E-mail Staff lists	Sept 2004	Oct 2004	Send e-mails to all junior/ senior high mathematics teachers to determine interest in CASL groups Due to assignment changes there were not enough senior high teachers interested
Initial meeting of all interested teachers	Release time for teachers	Nov 2004	Nov 2004	10 people attended the meeting, with 2 others expressing interest in participating 2 groups of 5 members each (1 group meeting Mondays, 2nd group meeting Tuesdays, about every 3 weeks) Develop norms, groups, timelines, etc
Initial training for participants on the VC equipment	Video suites in the schools Technology personnel to train the teachers	Nov 2004	Nov 2004	Participants became more comfortable using the equipment
Year-end evaluation (online survey, questionnaire)	Select Survey ASP (survey program)	May 2005	Jun 2005	Data used to evaluate the project

Appendix D-2

A Plan to Support Grade-Level/Curriculum Teacher Communication between Schools

Subcommittee members: Michelle Gilbert and Fred Kirby

Strategy	Resources Required	Date Initiated	Date Completed	Outcome of Action
Grade-level lists	Communication from administration/teachers	January 2004	October 27, 2004 (List compiled and e-mailed to Paul Flowers)	Lists distributed to all school division staff
Find out if lists are being used	Fred will ask reps at local council	April 2004	April 2004	Promote greater use of materials
Examine and finalize technology to be used by moderators	Michelle to meet with tech team	April 2004	April 2004	Prologue to getting moderators
Identify potential moderators	E-mail after we nail down tech details	After Easter break	May 2004	Grade-level persons completing the websites
Info/ training for moderators	Release time from board Planning of session(s) Plan to have follow-up sessions and discuss successes and concerns Trainers—Dexter Gilbert (software) and Joni Turville (virtual team leadership)	Before June 2004 or in August (meeting)	January 7, 2005	Evaluation Teachers volunteering to be moderators Teacher participation Teacher feedback Facilitator feedback Level of interaction Relevance/quality of interaction

Strategy	Resources Required	Date Initiated	Date Completed	Outcome of Action
Moderators customizing and using the website	Computer access and ideas	January 7, 2005		Some initial contact has been established Need to look at lists being accessed from mailing to be sure all at grade level are getting contacted
Moderators inviting group members to visit and use sites	Moderator participation Group e-mail lists	January 7, 2005	January 31, 2005	Completed SharePoint sites Site participation by group members
Online meeting with moderators to discuss challenges/ successes and to see how we can offer more support	Learning suites Snacks Moderator participation	February 2005	March 2, 2005	Feedback from moderators Next steps planning
School visits to help people access sites	Marj and Susan visiting schools Accessible sites	March 2005	Ongoing	Increased numbers of teachers visiting sites
Newsletter outlining work of committee and publicizing SharePoint sites	Newsletter created and e-mailed to division staff	March 2005	March 2005	Increased awareness of committee projects and SharePoint sites
Demonstrating SharePoint sites at next PD meeting	Computer lab access Room on meeting agenda	March 2005	April 2005	PD reps will share information with staff at next staff meeting (April)

Strategy	Resources Required	Date Initiated	Date Completed	Outcome of Action
Creating SharePoint site for beginning teachers and uploading current curriculum resource materials to grade/ subject-area appropriate sites (in place of curriculum support binders)	Materials to be transferred from shared staff folders Site to be created by IT staff Site will be linked to grade-level/subject-area sites AISI coordinators introduce and demonstrate at beginning teachers orientation in August	March 2005	Continuing	Beginning teachers use both sites for support and resources.
Adding timely information to SharePoint sites to share with teachers	Moderators will upload documents and notify teachers of updates Will include resources pertaining to parent–teacher interviews, track and field, PATs, curriculum changes, sports day planning, education week and outdoor safety	March 2005	Continuing	Increased traffic to sites
Moderators reflect and report results of site usage and user participation	E-mail feedback from subject-area and grade-level moderators	May 2005	June 2005	Site usage and participation data Feedback from moderators

Appendix D-3

A Plan to Develop a Section of the Division Website with Links to Professional Development Topics/Support on the Web

Subcommittee members: Paul Flowers and Susan Richards

Strategy	Resources Required	Date Initiated	Date Completed	Outcome of Action
Develop criteria for site selections (April 2004)	Internet Review *Focus on Inquiry*	December 2003	Ongoing	Website addressing identified PD needs Top 5 PD topics : differentiated instruction; assessment; literacy; special ed/modifying instruction for student with special needs; technology integration
Develop architecture for webpage (Paul)	Textbooks on PD usually list websites "The Principal as Professional Development Leader"	Subsequent meetings	Extended throughout the school year 2004/05	Website up and running Hit counter to indicate frequency of use One-step link from main website for ease of access
Identify Internet sites linked to province, district and school goals, eg, Aboriginal websites (end of May)	Word of mouth Teacher/teacher Linkage to PD committee			Top 5 topics for PD identified from compiled school goals and teacher input re Professional Growth Plans via PD Committee
Searching Web for sites (Peter MacKay, Cathy D'Amond)	Search engines	Ongoing until end of May	Launch March/ April 2005	User-friendly website, easy access for computer impaired—maximum two clicks!

Strategy	Resources Required	Date Initiated	Date Completed	Outcome of Action
ATA possibly contracting two teachers to identify websites for pedagogical portal—link on desktop Test run before launching	Visit our existing site Suggestions—take the best of the best	Fort Vermilion prototype test website up by end of June 2005		Test-run evaluation of initiative website Survey teachers on use and effectiveness of site evaluation tool right on site
We need a communication plan to educate teachers on what this project is all about PD reps could e-mail suggested sites to teachers —push new sites Also colour code sites to look at during staff meetings	Information Newsletter E-mail Internet PD reps	February 2005	Ongoing	Teachers will be aware site exists Teachers will visit the site Links will be sent to PD reps Feedback will be given to Paul and/or Susan

Appendix D-4

A Plan to Facilitate the Work of Local PD Groups (Action Research, Study Group), Learning Suites and E-mail

Subcommittee members: Susan Richards, Jacquie Skytt and Lorna Joch

Strategy	Resources Required	Date Initiated	Date Completed	Outcome of Action
Work with local PD Committee to identify potential topic/speaker	Cathy Dee Brand	April 5, 2004	April 24, 2004	List of potential topics and speakers generated
Confirm Martha Kaufeldt (Brain Compatible Differentiated Instruction)	NRLC Site to host	June 1, 2004	October 25, 2004	Contract, date and location confirmed and advertised Session at FMCS during October PD Day attended by 65 (60 staff members from FVSD)
Establish online differentiated instruction study group	Susan R E-mail Publisher information sheet Participants	September 2004	November 1, 2004	At Martha Kaufeldt inservice information provided regarding study group to be established Format of study group explained on information sheet and in person E-mail sent to staff following the workshop to encourage more participation (sent twice)
Post materials on weblink (SharePoint site for group to access) First set of materials to be sent by e-mail as well	ASCD materials E-mail SharePoint site	November 4, 2004	June 2005	Explanatory e-mail for project and DI Self assessment to be sent on Nov 4 First article on Nov 8 Site now accessible at home using password

Strategy	Resources Required	Date Initiated	Date Completed	Outcome of Action
Study group process begins with e-mail communication	Computer/Internet access DI articles as weblink, Word doc or PDF SharePoint site	November 4, 2004	June 2005	Materials sent/posted for group to access Participants participate in discussion related to article Post a comment and/or question before Nov 22 Two articles and resource list posted; 10 participants posting
First face-to-face meeting using learning suites	Video-conference suite ASCD materials Participants E-mail to announce date and time Food	December 1, 2004	January 17, 2005	First learning-suite meeting Dec 1 (4:00–5:00) postponed due to weather. Eight attended using HLPS and LCPS (weather issue again) Website/ASCD video main emphasis of meeting Some tech glitches. Group was very quiet. Need to become more comfortable with system/mode of communication Plan for more interactive sessions
DI workshop with Joni Turville	Video-conference suites Participants Presenter Handouts Food	April 2005	May 17, 2005	Successful evaluation of session and meeting Responses will be included in the online survey Three learning suites used Total of 15 participants
Project Survey	Program to create online survey E-mail to distribute survey Access to Internet	May 2005	May 2005	Survey sent to members of the study group Access provided for one-week period Data collected to aid in evaluation of the project goals

Appendix E

Video-Conference Suites Equipment List

Each of the eight locations is equipped with:

Qty	Description
Rack-Mounted Equipment	
2	MPEG encoder
2	MPEG decoder
2	MPEG rack frame
4	Codec's for student work stations
2	SXGA distribution amplifier
1	SXGA distribution amplifier for portable video projector
2	SXGA switcher
1	Speaker/amplifier
1	Video switcher
1	Video distribution amplifier
5	Video distribution amplifier
2	CV/SV decoder
1	PIP inserter
1	Black generator
1	Computer scan converter
1	VCR/DVD combo
1	Rack shelf
1	Audio mixer
1	Audio mixer/echo canceller
1	Primary control system
1	Secondary system controller
1	Custom panel interface
1	6.5 A power supply
1	Portable equipment rack
1	Rack patch panel

Qty	Description
Room Equipment	
2	Presenter camera
1	Camera wide-angle lens
2	Presenter camera wall mount
1	Document camera
2	27″ TV monitor
2	32″ TV monitor
2	Ceiling mounts for 27″ TV receivers
1	LCD video projector system
1	LCD computer monitor
1	Wireless keyboard and mouse
1	Touch screen panel
5	Desk microphones
1	Ceiling microphone
1	Wireless microphone
10	LED question queue push button assembly custom mounted in hole drilled in PCC160 microphone housing the following makes and models:
	Amnis NAC-3002 encoder
	Amnis NAC-4001 decoder
	Amnis NAC-101 rack mount
	Polycom via video
	Extron P2DA2+ SXGA distribution
	Amplifier

Qty	Description	Qty	Description
	Extron P2DA2+ SXGA distribution		Mid-Atlantic PTRK21 21 space rack c/w
	Amplifier		PTRK-RR21 rear rack rails, (2) PD915R
	Extron SW-4VGAxi 4x1 SXGA switcher		rack mount power bar (mounted on rear rack rails)
	Anchor AN100 c/w SB-1 swivel stand		Custom mounted on side of rack
	Mounting bracket		Canon VC-C4
	AutoPatch 1/2-Y 8x4 S-video switcher c/w vertical interval		Canon WL-37
	RDL RU-VDA4		Pelco 1450
	Kramer 401C		Elmo 4400AF visual presenter
	Kramer 401D		Panasonic CT-27D12 27" television
	Kramer PIP-200		Panasonic CT-32D12 32" television
	Video BBGEN-1		Da-Lite QLC-2532
	Extron VSC150 scan converter		SMART technologies 3000i
	Panasonic PV-D4742-K VCR/ CD combo		NEC LCD 1550V LCD monitor
	Mid-Atlantic U3 rack shelf		Gyromouse pro and gyro mobile keyboard
	Lectrosonic AM-8		AMX AXT-CV10 control panel
	Clear One AP400 audio mixer		Crown PCC-160
	AMX NXI-ME NetLinx integrated controller		Clock audio C007E
	with master ethernet		Audio-Technica AT-871R
	AMX NXI-NH		Shure UC 14/85 UHF wireless mic
	AMX AXP-CPI-16		IDEC HA1L-M1C63 (mushroom type, one red and one orange)
	AMX PS6.5 c/w rack panel		
	HP ProCurve Switch XL 100/1000-T module		

Appendix F

Screen Shots

Figure 1: A link developed in the division website from which teachers can easily access the SharePoint sites. The listing shows all the grade levels and subject area sites that were developed.

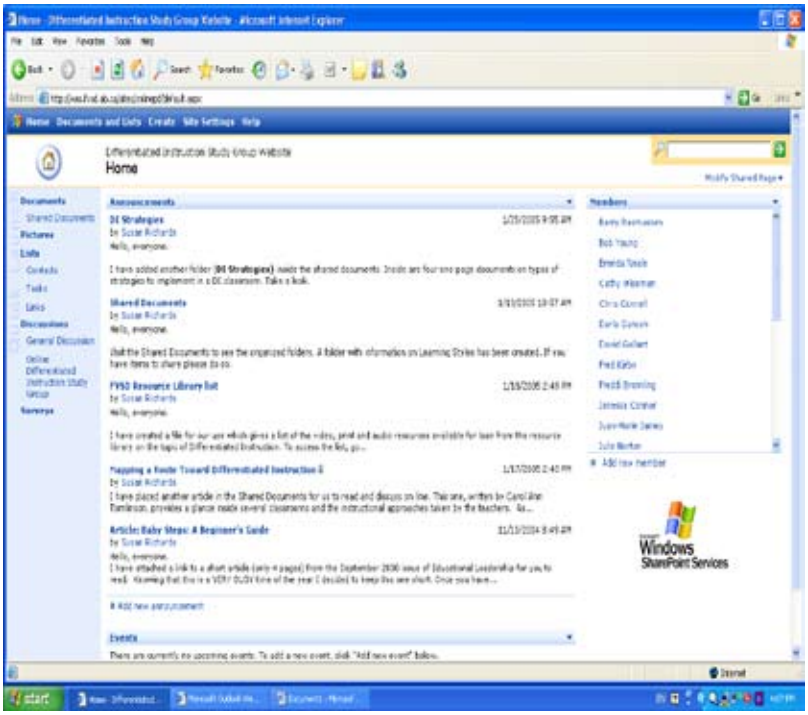

Figure 2: Homepage for the Differentiated Instruction Study Group (Research Study D), which provides announcements to site members and a listing of those who have access to the site.

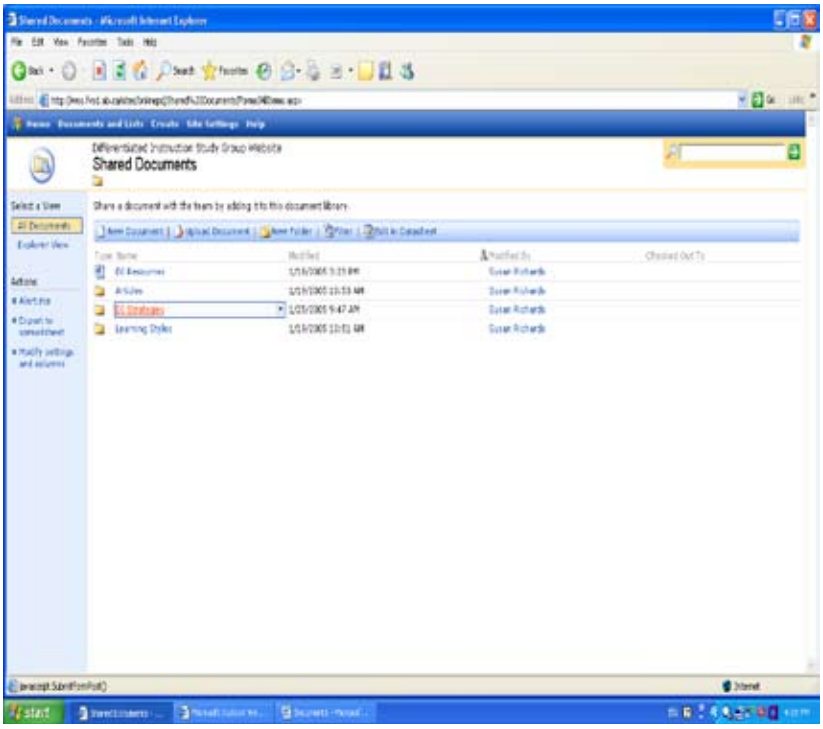

Figure 3: Shared Documents folder contains individual folders with Microsoft Office files.

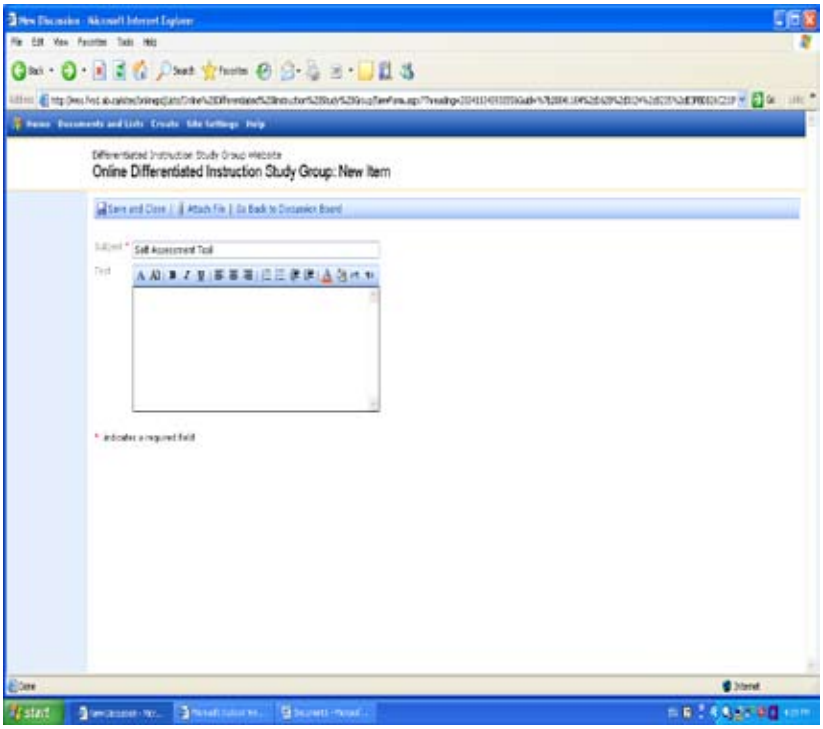

Figure 4: This is the screen site members see when posting a reply to a discussion topic or a new topic.

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