Transforming Teacher Practice Through Blended Professional Development: Lessons Learned From Three Initiatives

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Abstract: The paper presents a comparative analysis of the evaluation findings from three major multi-jurisdictional teacher professional development initiatives that used a blended model for delivery incorporating both online and face-to-face components. We outline the three initiatives and the evaluation strategies applied to them, and then discuss what the findings indicate about best practices and problems in utilizing blended models of professional development.

Introduction

Online professional development utilizing information technologies and involving teachers in virtual learning communities is gaining in popularity (Dede, 2006). The research on online professional development has demonstrated a number of benefits it offers for teachers, including anytime/anywhere professional development (Varsidas & Zembylas, 2004), instant access to a network of professionals with useful skills and knowledge, continuous training and professional development (Charalambros, Michalinos, & Chamberlain, 2004), and fostering a learning community (Chapman, Ramondt, & Smiley, 2005). However, developers of online professional learning communities face technical challenges such as finding a platform to support virtual communities in a way which does not involve a steep learning curve (Charalambros et al., 2004) and which would allow for a variety of relevant professional development activities to take place online (Vrasidas & Zembylas, 2004). There are also critical challenges involved in organizing and maintaining a virtual community in which participants develop the sense of belonging, trust and support which are a prerequisite to learning in a community (Charalambros et al., 2004). To promote this crucial community building, there has been a recent move to utilize blended approaches to professional development. These incorporate face-to-face components that are intended to strengthen the social cohesion of the learning community and develop a collective momentum for implementing meaningful change in teaching practices (Bonk & Graham, 2006).

To date there has been very limited research on the application of blended learning to teacher professional development. Holmes, Polhemus, and Jennings (2005) analyze a blended professional development program for in-service K-6 teachers which focused on integrating technology into teachers' practices. The blended approach proved more efficient in providing teachers and schools greater opportunities for more independent learning and practice thereby increasing sustainability. It introduced teachers to affordable and efficient technologies, provided scaffolding for the development of a learning community, and facilitated the autonomy and independence of teachers. Teacher response to the blended model was mixed, with some participants mentioning lack of time to participate in online discussions, and negative effects arising from the amount of time spent on the computer.

To further our understanding of the contexts, conditions, and practices that contribute to the success or failure of blended learning for professional development, this paper integrates key evaluation findings from three major multi-jurisdictional professional development initiatives that employed a blended learning model. We first outline the three projects and the evaluation strategies we applied to them, and then consider what the findings indicate about best practices and problems in utilizing blended models of professional development.

Advanced Broadband Enabled Learning

The Advanced Broadband Enabled Learning (ABEL) initiative was designed to facilitate the transformation of teaching by establishing a sustainable collaborative learning community for teacher growth that incorporated the use of broadband technologies. The project provided teachers in selected high schools in Alberta and Ontario with access to videoconferencing hardware in their schools, a range of software applications, the technical and pedagogical support needed to use these applications, online professional resources, some teacher release time funding (from the participating boards of education), and access to Canada's high speed data network CA*Net 4. ABEL's goal was to provide teachers with opportunities for continuous self-directed professional learning on the job in partnership with colleagues in the project, and to move teaching toward being more learner-centered, collaborative, and inquiry-based. Supported by specialist experts, over two school years teachers participated in a combination of large group videoconference events that focused on key themes (e.g., the use of ABEL tools, inquiry learning, and effective videoconferencing techniques), and small group subject area-specific videoconferences in which they brainstormed, planned learning events, and sought out colleagues with whom they could develop cross-class and inter-provincial student learning projects. Facilitated online discussions (such as book discussions) and voluntary professional development activities and assignments were also used.

The development of learning events and projects was facilitated by post-secondary advisers and learning leaders associated with ABEL, who supported teachers in incorporating inquiry learning approaches into their initiatives. The projects were implemented in the classroom, and could incorporate one or more of a number of elements, including class to class videoconferencing sessions, the use of streaming media from repositories, student creation of web pages, PowerPoint presentations or other digital artifacts, and videoconferences with leading experts or participants in significant events. Projects ranged in extent from bringing in a guest speaker as an enrichment activity to having students work over several weeks on inquiry-oriented projects which incorporated videoconferencing events to support collaboration with another class. Both students and teachers made use of the ABEL Community web site, which provided discussion forums, chat, a calendar of ABEL events, and a portal to the suite of ABEL software tools and online resources. These tools included WebCT, the widely-used course management system, and Intelligence Online (http://www.myio.org/), an online learning application that guides teachers through the process of creating and implementing inquiry-based learning projects. In addition, the teachers attended two three-day, face-to-face Summer Institutes for community building and professional development.

Teacher eLearning Project

In two consecutive years, the Teacher eLearning (TeL) Project provided blended professional development for about 100 grade 6-8 math teachers (year 1) and science/technology teachers (year 2) in the Greater Toronto Area. TeL had two main goals with regard to mathematics and science/technology education: (1) to improve teacher attitudes, knowledge, and classroom practice; and (2) to improve student attitudes toward, engagement in, and learning of the subjects. The program began at the start of the school year with a daylong face-to-face session followed by an eight week online session that included facilitated discussions and assignments. This pattern was repeated two more times, with the addition of a final face-to-face session. The program's pedagogic focus was on building teacher capacity and motivation for employing student-centered and inquiry-based approaches to math and science teaching. All of the modules in TeL related directly to the Ontario provincial curriculum that the teachers in the project were responsible for teaching. The face-to-face sessions, which were led by curriculum consultants from participating school districts, typically began with a whole group introduction to the upcoming module topic in the morning. During the afternoons teachers participated in one of four or five multi-school teams (teams which persisted throughout the project to build social cohesion). This gave teachers an opportunity to work at hands-on activities, share their experiences in trying out ideas in their classrooms, and discuss the topics presented during the morning.

Each week of the course had structured activities. In any given week participants might do any combination of the following: download professional articles, video teaching examples, interactive applets, worksheets, and forms; join live moderated chat sessions; discuss in online forums their implementation of program activities in their classes; post reflective journals about their experiences trying out TeL Project activities; or upload their work. Each of the online discussion groups was led by an expert teacher hired to facilitate the discussions.

Schools that had teachers participating in TeL were provided with a budget to hire substitutes for teachers attending the face-to-face sessions; they were also given funds to release teachers from their classrooms for a half day per week during the eight-week online periods to provide them with time to plan and participate in online activities.

Learning Connections

The Learning Connections (LC) project is directed at enhancing student achievement in literacy and numeracy in grades four through six through the provision of blended learning focused on advanced, evidence-based teaching practices. The specific intent of Learning Connections is to build capacity within the participating districts and schools to further student literacy/numeracy learning and achievement and to support the participants as they implement the Ontario Ministry of Education's Foundations program to advance literacy and numeracy (Ontario Ministry of Education, 2004a, 2004b). It is designed to be job-embedded, focused on classroom practice, collaborative, and to build a learning community that supports risk-taking and change. An ongoing project, its participants include lead literacy and numeracy teachers, specialists, and administrators from nine Ontario school districts (six Anglophone, three Francophone). Building on the technologies and processes developed in ABEL, it has incorporated two three-day Summer Institutes to date for professional development and community building. These institutes serve to familiarize new members with the goals, activities, and technologies of Learning Connections, and make it possible for participants to establish the personal contacts that are vital to sustaining the online life of the learning community. Keynote speakers and expert panelists offer talks and workshops on all aspects of literacy and numeracy education, and training sessions are offered on the use of various portal components and software tools the project supports, such as videoconferencing and blogging tools.

Learning Connection's online presence makes use of a Web community portal, broadband networks, and ICT applications to provide activities and resources for professional development and community building. Access is provided via live videoconferencing and streamed media to literacy and numeracy experts who make presentations and lead discussions on teaching and assessment strategies. The portal is used to deliver professional development activities and assignments in literacy and numeracy that are grounded in grounded in classroom practice as well as mentored discussion groups on critical topics and questions in numeracy and literacy education. The web-based portal also provides access to a calendar of upcoming events, ICT tools, and multimedia-based professional development resources such as videos of expert classroom teaching, teaching guides, and LC research summaries. Our evaluation of this project has completed its first two interim phases.

Evaluation strategies

The evaluations of all three projects were guided in part by Guskey's (2000) professional development evaluation framework. This model encourages the evaluator to collect data on teacher perceptions, teacher learning, school context, classroom implementation, and student outcomes. The primary sources of data were semi-structured interviews and focus groups conducted with the teacher-participants, participant and student surveys, transcripts of participants' online discussions, and observations of many of the programs' professional development activities such as videoconferences and face-to-face sessions at Summer Institutes and workshops. Likert-scaled survey data was subject to statistical analysis; all other data was qualitatively coded and analyzed using standard qualitative techniques.

Design and Implementation Factors Critical for Success

A comparative analysis of the three projects' evaluation findings illuminated several factors common to all projects which had a very substantial impact on the level of success of these blended initiatives in transforming

teacher practice. The major factors are discussed below, together with evidence supporting their importance taken from the project evaluations.

The development of a cohesive learning community is essential to project success. Blended programs which begin with substantial face-to-face contact are more successful at establishing the necessary social rapport and professional focus at an early stage, fostering the interest and engagement that is required for changing teacher practice. This strategy was used with the Teacher eLearning Project, and participating teachers noted in their post-program focus groups that their initial all-day group sessions helped to establish the social contacts needed within their small working clusters that made it easier for them to work together online and helped to build an enthusiasm for participation in the project. By way of contrast, the failure of both the ABEL and Learning Connections projects to involve significant numbers of participants in their initial face-to-face Summer Institutes (due to delays in getting project participants selected) had a deleterious effect on the initial participation in online community activities and use of community resources which took many months of staff contact and encouragement to redress. Face-to-face sessions may be costly but are essential to building a strong and mutually strengthening learning community, and should occur several times over the course of the program to sustain motivation and persistence. These sessions need to be focused on promoting reflective dialogs and interactive activities rather than whole-group presentations by experts (pre-session distribution of background readings and video can provide the necessary knowledge base for successful face-to-face sessions). Participants can then use their meeting time more productively for curriculum building and practicing new pedagogical techniques. Large-group videoconference sessions in which most participants had very little opportunity to interact, spending nearly all of the time listening to speakers, were viewed as largely unhelpful by ABEL and LC participants. Both they and the Teacher eLearning participants valued opportunities to try out strategies, share experiences, and engage in reflective discussion much more highly.

A project's online portal interface as well as the software tools employed in the project should be as reliable and simple to use as possible to minimize potential participant frustration that might limit use, without sacrificing needed functionality. Both the ABEL and Learning Connections portals were overly complex in their initial iterations and teachers reported that this complexity and the difficult-to-manage interface associated with it were a definite disincentive to use. Many of these problems could have been overcome had the developers carried out some rapid, simple usability testing of their portals before going live (see Nielsen, 2007). In the final phase of the TeL project some teachers who made use a simpler and more visually attractiveBlackboard-based reported being more willing to make use of it than others who had to employ a more complex custom-developed portal used through the first phases of the project.

Reliability and simplicity of use was paramount for those attempting to set up and participate in videoconferencing activities in the ABEL and LC projects. Both of these projects employed videoconferencing solutions that utilized custom computer hardware, software, and cameras. Setting up and operating this equipment took a considerable amount of time for some participants to get comfortable with, as there was some unavoidable complexity involved in connecting components, establishing network connections, and stabilizing reliable audio and video links with other participants in multipoint videoconferences via a central conference "server". While many teachers (primarily those with higher levels of computer skill) were able to master the necessary steps without significant difficulty, others were dissuaded from attempting it without help, and a few who had encountered failures expressed frustration and were not willing to pursue its use further. One strategy that proved moderately successful at a few sites was to train a cadre of technically-proficient student volunteers to set up and maintain the videoconference session. As software improves and network technologies advance, simpler and more reliable videoconferencing solutions (such as that offered by Macromedia's *Breeze*) offer the promise of more reliable videoconferencing.

Effective projects have substantial support from administrators, who are aware of the project's demands on teachers and work to accommodate these needs effectively so teachers have the time they need to succeed. In both the LC and TeL projects, support of principals was a key factor in teacher participation levels and perceived project value. Any failure on the part of principals to provide or adequately schedule teacher release time budgeted for in the projects would decrease participation levels and often lead to marginal teacher involvement over the course of the project. Having adequate time to participate was widely cited by teachers as being the greatest prerequisite for maintaining or increasing participation in all of these projects.

Successful projects provide a mechanism to keep participants "plugged in" to the community, such as emailed reminders of upcoming events and project deadlines. Without these reminders participants (especially those not taking part in ongoing assigned tasks or discussion that are mentored or facilitated) tend to lose connection with the project and reduce participation in the community in the press of other work.

Facilitators are essential to projects to support online professional development activities and dialogues, and to help build a virtual learning community. Effective projects ensure that their facilitators are well trained and have opportunities to discuss problems and issues. The level and quality of facilitator participation correlated highly with teachers' perception of the professional value of their participation in reflective discussions around questions and assignments in the TeL Project. During the first year project facilitators were not specifically trained on how to lead online discussions successfully; however, during the second year training and monthly telephone meetings of facilitators were held in order to improve the quality of their work, and as a consequence, teacher participation improved. An initial lack of expert literacy/numeracy facilitator involvement in the online components of the LC project contributed to the dearth of activity in its discussion and study forums over the first year of its operation.

A critical component of effective projects is the ongoing monitoring of participant needs through a number of avenues, including periodic formative evaluations, participant surveys, and the provision of channels for informal feedback to project staff to catch misdirections early before participants become too frustrated or apathetic to continue. Project personnel for both the ABEL and LC projects, in cooperation with the project evaluators, actively sought feedback through both formal and informal channels, and used this feedback to begin to address the difficulties participants perceived as interfering with community building and the project's impact on professional development and teaching practice. Remedial steps taken included the simplification of the portal design and interface (ABEL and LC), a move from whole-group to smaller subject-oriented interest-group videoconferences (ABEL), the provision of more activities and content focused on improving classroom practice (LC), and greater integration with and responsiveness to local school broad literacy and numeracy training needs (LC).

Successful projects structure opportunities for teachers to share and discuss teaching practices and reflect on outcomes (and outcome assessment) through online forums and other venues (videoconferencing, face-to-face sessions). Teachers need opportunities to collectively reflect on the relationship between specific teaching practices and student outcomes. They frequently report that this aspect of sharing is the most valued and powerful component of the project experience.

Teacher motivation and willingness to risk trying new approaches can be enhanced by providing opportunities for teachers to develop curriculum and try out new teaching practices together through involving their classes in cooperative projects, as these activities provide teachers with an important source of collegial support when attempting something new. This proved to be a key element of the ABEL program for participating teachers, and it motivated many of them to push past the technical difficulties encountered in videoconferencing and working together over great distances.

Effective initiatives build a "critical mass" of participants in a learning community. There need to be enough participants in discussions and other activities to build and maintain a collective momentum for reflection and professional knowledge building. Participants whose contributions are not responded to will very quickly lose interest in contributing. This problem plagued the early stages of both the ABEL and LC projects for reasons discussed earlier. A negative cycle can develop in that relatively empty forums serve to dissuade a high percentage of potential contributors from adding to discussions. The cycle can be overcome by either (1) initiating the forums with a large body of potential participants so that even if a very low percentage initially become contributors a sufficient mass is quickly reached to sustain reflective dialogs, or (2) by mandating participation as part of the teachers' professional development requirements, as was done in the TeL project.

The development of a viable learning community that can transform participants' teaching takes time. Effective PD project developers and funders realize this, and incorporate the longer project timelines needed for success into their designs. Michael Fullan, who has extensively studied and written about educational change, estimates that an elementary school can be turned around from a poor performing school to a good or better one within three years, a high school can be reformed in six years, and a school district in about eight years (Fullan, 2001). Both ABEL and LC would have been deemed a failure had they received summative assessments at the end of their first year due to low levels of initial take-up and consequent minimal impacts on teaching practice during

that time frame. While the shorter and more intense TeL projects were perceived by most participating teachers to have led to a rethinking of their approaches to math and science teaching, it was unclear what impact the project really had on classroom practice by the end of the project year, as the examples of changed practice proffered by interviewed participants were generally minimal.

Sustainability is fostered by providing participants with an infrastructure that can continue to support the learning community following the conclusion of the formal program, through continuation of online forums, provision of a resource portal, and/or audio or videoconferencing capabilities. Even after most of its project funding ended, ABEL has been able to sustain and even significantly expand the size of its participating community, in large part because of the willingness of one school board to continue to fund the positions of the two key project management personnel, and the hosting university to maintain the project portal.

Conclusion

The complexities inherent in designing and delivering effective professional development has led to inadequacies in most professional development work due to fragmentation, superficiality, and ignoring the principles of teacher learning (Borko, 2004; Fullan, 2001). The relative success of the projects reviewed here in building and sustaining effective learning communities that facilitated professional growth in teacher knowledge, attitudes, and (in most cases) practice was not accidental—it can be directly tied to their design and implementation, which incorporated most if not all of the critical elements discussed in the introduction. Hiebert, Gallimore, and Stigler (2002) contend that professional development will only have results if it is long-term, school-based, collaborative, focused on the student, and linked to curricula. Blended professional development initiatives that take the factors we have discussed in this paper into account in their design and implementation will have a much greater likelihood of meeting these requisites for success.

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