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Learning community building: lessons learned from an online professional development program for in-service teachers

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Abstract

The importance of learning community building for professional development has been widely recognized, particularly for online professional development. This paper reports the efforts of an online professional development program to help in-service teachers form learning communities. Evaluation data, collected during the progress of this program and nine months after its completion, show that learning communities were difficult to initiate and even more difficult to maintain in an online learning environment. The lack of social context in an online environment and the participants' preference for face-to-face communication are the most significant factors for the difficulty of online community building. Suggestions for future online professional development are highlighted in building stronger learning communities.

Introduction

The importance of teacher development for school success has been well documented. To improve the quality of in-service teacher development,

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the American National Staff Development Council compiled a set of guidelines from a comprehensive study of the lessons learned over past decades on professional development. The guidelines suggested ideas for involving teachers in research and school decision making; however, they emphasized most the need to provide in-service teachers with collaborative opportunities to make sense of the teaching and learning process (Sparks, 1994). This concept of peer collaboration has been elaborated and extended later by many scholars. For example, Riel (1996) argued that through collaborative intellectual exchange, teachers can support each other's professional development. Stein, Silver, and Smith (1998) and Lieberman (2000) supported such peer collaboration by arguing that teacher development occurs best through the building of communities of collaborative and reflective practitioners.

The question left unclear is how to promote such professional community building within the in-service teachers' busy schedule and schools' financial limitation. To find solutions, many people turn their attention to computer technology because they believe that technology is able to help us build a learning and communication environment which is affordable in time and cost to schools and teachers. Harasim (1990) and Linn (1998) stated that computer-based technologies have introduced unprecedented options for teaching and learning, while expanding the opportunities for building learning communities. A new technology-based asynchronous learning network allows collaborative learning at the time, location, and pace of the individual learner, and allows for multiple discussions to occur simultaneously. Pringle (2002) argued that an online network creates space for all learners to share their ideas and to interact in ways that are comfortable to them, particularly for those students who experience some discomfort talking in a face-to-face learning environment. The benefits for learners include a nurturing of self-learning abilities as they acquire not just explicit, formal knowledge, but also the ability to behave as community members.

An online network, however, is not easy to build. Levin, Kim, and Riel (1990) analyze the structure of online group interactions and propose a set of criteria for online network success. The criteria include: 1) a group of people who share interest in a task but find it difficult to get together; 2) a well defined task to be accomplished by the group; 3) ease of

access to a reliable network; 4) a sense of responsibility to the group and/or task; and 5) strong leadership and final evaluation of the group task. For most professional development programs, it is hard to ensure that all of these criteria be met. Stephens and Hartmann (2004) described their example of a successful professional development project that failed to promote online discussion among participants. Barab, MaKinster, Moore, Cunningham, and the ILF Design Team (2002) reported that online participation could be viewed as nothing more than busy work if learners were forced to use online communication tools.

The authors conducted an evaluation study, which lasted over a year, on an online professional development program called “ICT in High School Learning”. The program was designed to train in-service teachers to implement a new Information and Communication Technology (ICT) curriculum. One of the program goals was to promote a community of learning and practice among the participating teachers and possibly including some of their colleagues as well. The program was delivered to two different groups: central group and remote group. The central group had opportunities to occasionally get together through the program, but not the remote group. Our research purposes were to explore what challenges online professional development in the area of ICT may have in promoting learning communities and how the occasional meeting opportunities contribute to the success of learning community building.

The Development Program of ICT in High School Learning

In order to better prepare young generations for the information society, Alberta Education, the provincial Ministry of Education, has introduced a new ICT curriculum into its school system¹. The ICT curriculum provides a broad perspective on the nature of technology, how to use and apply a variety of technologies, and the impact of ICT on student themselves and the society. It specifies what students from Kindergarten to grade 12 are expected to know, be able to do and value with respect to te-

¹ The ICT curriculum can be accessed at the website of Alberta Education, http://www.education.gov.ab.ca/k_12/curriculum/bySubject/ict/

chnology. With a belief that technology is best learned within the context of applications, the ICT program of studies is structured as a “curriculum within a curriculum”, using the core subjects of English Language Arts, Math, Science and Social Studies as a base. In other words, the ICT curriculum is not intended to stand alone, but rather to be infused within core courses.

The ICT curriculum defines learning outcomes around three inter-related categories of concepts: 1) Communication, inquiring, decision making and problem solving; 2) Foundational operations, knowledge and concepts; and 3) Processes for productivity. The first category is about the ability to use a variety of processes to critically assess information, manage inquiry, solve problems, do research and communicate with a variety of audiences. The second category entails understanding the nature and affect of technology, the moral and ethical use of technology, mass media in digitized context, ergonomic and safety issues, and basic ICT operations. The third category emphasizes the knowledge and skills required to use a variety of basic productivity tools such as word processing, database, spreadsheet, graphics application, Internet browser, email, multimedia applications, and media clips. For each category, the curriculum specifies associated outcomes in a progressive sequence throughout the grades. It also provides illustrative examples and an assessment tool kit. The illustrative examples clarify the intent of the outcomes and convey their richness, breadth and depth. The assessment tool kit provides a support framework for determining student competencies in the ICT outcomes within core subject courses.

Studies have documented that a large percentage of teachers are not ready to use technology in teaching (Barron, Kemker, Harmes, & Kallaydjian, 2003; Williams & Kingham, 2003; Zhou, Brouwer, Nocente, & Martin, 2005). A wide range of school teachers, therefore, requires professional development in order to effectively implement the new ICT curriculum. They need to understand the new curriculum, learn how to integrate ICT in classrooms, and adopt new teaching and learning approaches. In response to these needs, a 25-hour online professional development course, “ICT in High School Learning”, was developed by the Calgary Board of Education. It included three major modules: ICT outcomes, ICT assessment, ICT teaching and learning activities. These modu-

les were designed to help participants understand each component of the curriculum and provide participants with an opportunity to design, develop, and pilot ICT teaching and learning activities. Besides these three modules, there was another module called “WebCT Basic”, which participants did not have to go through if they knew how to use WebCT before the course. The focus of the course was not on discrete ICT skills, but rather on gaining familiarity with the ICT curriculum, determining points in the subject curriculum where infusing technology would enhance students learning and, finally, designing activities to effectively infuse ICT outcomes into learning tasks. Course participants were expected to 1) develop a broad understanding of learning and technology; 2) develop an appetite for further exploration and creativity in ICT; 3) be actively and collaboratively engaged in creating ICT activities for their classroom teaching; and 4) share what they learned in the course with other school teachers. Clearly, participants were expected not only to learn about how to integrate ICT with subject teaching, but also to collaborate with other course participants and help their school colleagues. At the end of the course, the instructor compiled all the ICT activities participants developed during the course onto a CD. Copies of the CD were distributed to participants for future reference.

Methods

With an interest in the possible differences between rural and urban teacher participants, the online course, “ICT in High School Learning”, was purposely delivered to two voluntary groups of secondary school teachers: central group (CG) and remote group (RG). The central group was made up of eighteen participants living within the Calgary region, while the remote group represented sixteen participants residing in scattered regions across the province of Alberta. Participants had extensive teaching experience; most had more than eleven years of teaching experience. Their teaching background covered a wide spectrum of secondary school subjects including math, science, social studies, psychology, physical education, food studies, fashion studies, arts, languages and religious studies with the largest group of participants teaching math.

The central group was offered three face-to-face sessions in addition to the online components of the course, but the remote group had access to only the online components. The three face-to-face sessions occurred at the beginning, middle, and end of the course, and were added to examine what impacts face-to-face sessions might have on an online teaching and learning environment.

In this course, effort was made to promote learning communities by pairing participants for discussion purposes. However, the pattern of pairing was different for the two groups. The central participants came from relatively larger urban schools and more than one participant often came from the same school. Participants from the same school were paired together as a learning group. In contrast, the remote participants came from relatively small schools scattered over a wide area of the province, with no participants coming from the same school. Learning groups for the remote participants were therefore usually formed between schools. Participants were encouraged to use Internet communication tools; however contribution to online discussion was not set as a criterion for course assessment.

Our study was done during the progress of the course and approximately nine months after its completion. Quantitative and qualitative methods were integrated for the study including surveys, interviews, and focus groups. The surveys were comprised of yes-no, rating, and modified Likert-scale questions. They were administered to both groups at the beginning of the course (initial survey), at the end of the course (exit survey), and nine months after the completion of the course (follow-up survey). The central group was given initial and exit written surveys at the first and last face-to-face sessions respectively, while the remote group was given the same surveys online. The follow-up survey was online for both groups. All the central and remote participants completed the initial survey. Sixteen central and fourteen remote participants completed the exit survey, and eleven central and seven remote participants completed the follow-up survey.

Focus groups were conducted face-to-face with the central group and via teleconference with the remote group at the end of the course. For the follow-up study, focus groups and individual interviews were conducted via telephone for both groups. About half of the participants

from both groups took part in the follow-up teleconference focus groups or interviews. The authors also interviewed the course administrator and instructor during the progress of the course and as part of the follow-up evaluation.

The surveys, interviews, and focus groups were designed and conducted to collect a broad range of data that were used to evaluate how successful the course was in achieving its goals. In this paper, we only report the data that are relevant to participants' experiences and comments about learning communities during and after the course.

Findings

The initial and exit surveys revealed significant differences between the central and remote groups (Table 1). For the yes-no questions in the initial survey, Chi-Square test was used to study the difference between two groups. For the Likert-scale questions in the exit survey, t-test was conducted to compare the responses of two groups. All the differences reported in Table 1 are statistically significant ($p < 0.05$). The differences found in the initial survey indicated that the central group had more experience with online learning than the remote group. Approximately 53 % of the central participants had experience with computer-mediated conferencing (CMC) prior to taking the course, while only 11 % of remote participants had this experience. Despite being located in a more urban setting, close to half of the central participants had previously taken a course with a major online component, whereas only 5 % of the remote participants had similar experiences. The central group also had faster Internet connections at home. Demographically the remote group was younger.

In the exit survey, almost all participants from either group reported that their communication with the instructor was "effective" or "very effective". However, the percentage of participants who reported a "very effective" communication with the instructor was different for the two groups. Approximately 94 % of the central participants thought that the communication between the instructor and students was very effective, however, only 54 % of the remote participants held the same opinion. When asked whether participants formed supportive learning communities, approximately 49 % of all participants agreed or strongly agreed that

Table 1. The Differences between the Central and Remote Participants

Survey	Questions	Response (%)		
		RG	CG	All Participants
Initial survey	Communicated using CMC prior to the course (yes)	11	53	33
	Taken a course with a major online component (yes)	5	47	27
	Participants younger than 39 (yes)	74	20	45
	High-speed Internet connection at home (yes)	39	69	55
Exit survey	Communication with the instructor (very effective)	54	94	75
	Instructor interacted frequently/constructively with students (strongly agree)	54	94	75
	Communication with other students (effective or very effective)	20	67	45
	There was valued and dynamic discussion between participants during course (agree and strongly agree)	14	67	42
	Participants formed a supportive learning community (agree or strong agree)	20	74	49

Notes: The last column "All Participants" reports the responses in percentage of all course participants including both CG and RG.

learning communities existed during the course, 74% of the central participants agreed or strongly agreed, and only 20% of the remote participants agreed or strongly agreed. Approximately 53% of the remote participants disagreed or strongly disagreed with the statement that participants formed learning communities during the course, while none of the central participants was so negative. These data indicate that when we examined all participants at one time, there was some uncertainty as to whether they formed supportive learning communities; however, when we looked at the two groups separately, there was a clear indication that learning communities existed among central participants, but not remote participants.

In the follow-up study, we found that any sense of learning communities that may have existed for either the central or remote participants were no longer present, aside from those which existed between course participants in the same school. In other words, most of course participants did not keep in touch with each other for whatever reasons, except those who came from the same school.

In the follow-up survey, 71% of participants agreed or strongly agreed that they had shared what they learned from the course with others in their schools. However, for most of the participants, the sharing was thin, no more than circulating the course CD or giving an isolated presentation. There was no sustainable plan to help other teachers get involved. Time was the reason most frequently mentioned by participants for this thin sharing: “Everyone is so focused on getting through the curriculum and stuff that you need to do with your own particular class that I don’t see that I’m necessarily spreading any new news to anyone.”

Discussion

Judged by the evaluation data such as instructor’s satisfaction with participants’ assignments, participants’ positive comments on the course, their improved understanding of technology and increased use of ICT activities in teaching, the studied online professional development course was a success. However, the data reported above indicate that the course was not as successful in promoting community building among in-service teachers during and after the course, particularly for the remote school teachers.

With respect to the uncertainty of all participants regarding the existence of learning communities, there were two things that might be relevant for an explanation. One was the communication between the instructor and participants, and the other was the flexible learning pace of individual participants. Participants reported that they had good communication with the course instructor. The effective communication between the instructor and individual participants might have hindered participants from solving problems together. As one participant said during the focus group at the end of the course, “It [learning group] was a great idea but I don’t know that there was any interaction at all. I know

I interacted a lot with [the instructor] and really enjoyed meeting and working with her.” When a participant had questions, he or she contacted the instructor. As a result, a satisfying response from the instructor did not encourage the participant to interact with his or her partner.

Participants from both groups considered flexibility as an attractive feature of online learning. However, the flexibility of learning was found in some ways to compromise the success of a learning community. Participants working through the course at different paces were not necessarily at the same place at the same time for discussing aspects of the course with their discussion groups. In other words, although there existed a task in which the group shared the same interest, which was essential for online network success in Levin, Kim, and Riel’s (1990) framework, the participants’ interest in the same task happened, unfortunately, at different times. One teacher participant during the focus group discussion at the end of course had a clear comment on this point:

Part of the problem [not much collaborative work] might have been that there wasn’t a clear timeline for everyone. Everyone could set their own pace, or at least that’s the feeling I got. Some people were running ahead of others. So, some discussions had been posted, whereas some had not been. We had to wait for some other people to do the first posting two weeks later. If a firm timeline was set and all the participants committed themselves to keeping up with the timeline, I don’t know if that’s realistic or not, that might lead to better discussions, because then everyone’s on the same topic at the same time and interacting in that same one week space.

The difference between the two groups of participants regarding the existence of learning communities might be contributed by two categories of factors. One category was related to the differences that the two groups brought to the course as described in Table 1. The central participants had more experience with online learning and communication than their remote counterparts. Their greater familiarity with online discussion might make them more apt to use computers as a tool for the purpose of communication. More central participants also possessed high-speed Internet connection at home. Levin, Kim, and Riel (1990) point out that the ease of access to a reliable computer network is an important

criterion for online communication success. One might infer that the slow dial up Internet connection might not motivate remote participants to frequently communicate with partners online. However, if we take other data into account, we doubt that the technology factor significantly influenced teachers' communication. In the initial survey, 41% of the participants reported that they used the Internet more than five hours per week at home, 38% used the Internet for four to five hours per week, 15% used the Internet for two to three hours per week, and only 6% used the Internet for less than one hour per week. If their Internet connection allowed them to surf the Internet, it should not be an obstacle for their online communication with other participants. In addition, if we compare the percentage of participants who had high-speed Internet connection with the percentage of participants who reported the existence of learning communities among the course participants (Table 2), it is clear that some remote participants who possessed high-speed Internet connection at home did not actively participate in collaboration, while some central participants who did not have access to high-speed Internet connection actually collaborated with others. Overall, the speed of Internet connection seems not to be a great factor in the determination of whether or not a participant took part in community building.

Table 2. Ownership of high-speed Internet connection vs. participation in learning communities

Groups	RG	CG
Ownership of high-speed Internet connection (%)	39	69
Reported the existence of learning communities (%)	20	74

The other category of factors, which the authors think more significantly contributed to the different experiences of the two groups than the technology factor, entailed the diverse class arrangement for these two groups. The central group had three face-to-face sessions during the course, while the remote group strictly had an online learning environment only. The central participants were paired within schools while the

remote participants were paired between schools. These arrangements left the remote group lacking social context in which participants could situate discussions with their partners. The paired partners were often unknown to each other since they were from different schools. It was difficult for them to work together on learning tasks for which synchronous communication was critical. For example, it was hard for remote partners to share and manipulate artifacts such as flowcharts, conceptual maps, and web pages that help focus the cognitive synergies of a team.

The situation was somewhat different for the central group. The within-school pairing and face-to-face sessions were helpful for building a close learning partnership or creating new ones. Most probably, knowing each other, or at least having met each other face-to-face made partners feel more comfortable working together on learning tasks. Partners from the same schools had opportunities to meet together and communicate in a rich context, rather than text-based telecommunication. Since questions and explanations about ICT activities are often not easy to communicate in a text-only format, a partnership from next door would save time and energy in explaining what the question was and how it could be solved. During the interview and focus group discussion, central participants reported that being paired with other course participants from the same school greatly enhanced their success in the course and considered them as ongoing support. For example, one central participant expressed the advantage of the within-school pairing by stating “Because we had more than one [course participants] within our schools, we were able to share what we were doing. That was really instrumental to my learning. I think that support is vital.” Those participants who experienced positive learning communities also frequently mentioned the advantage of having the face-to-face sessions. As one participant stated during the focus group discussion at the end of course, “I’m a visual person and I need to develop a relationship, to see your face and know who you are.” These results suggest that occasional face-to-face interaction could play an important role in an online learning environment. This finding supports the statement of Harasim, Hiltz, Teles, and Turoff (1996) that social communication was an essential component of educational activity, and the social bonds between learners had important socio-affective and cognitive benefits for the learning activities.

After the course was over, participants lost any sense of connection built during the class except those who came from the same schools. This suggests that a distributed learning community is considerably more difficult to maintain compared to a local community. For many reasons, teachers naturally prefer face-to-face communication as Stephens and Hartmann (2004) pointed out in their study. The availability of technology for communication over cyberspace does not automatically guarantee a successful network cross physical locations. Since the professional development should be viewed as a process rather than an event (Guskey, 1995), additional solutions need to be in place to keep distributed in-service teachers in connection for ongoing professional development.

Conclusions and Implications

Levin, Kim, and Riel (1990) pointed out that there are a set of criteria that need to be fulfilled for online network success, and it is often difficult to ensure that all of the criteria be met. Based on our study, we conclude that even though all of the criteria are met, there still exists some uncertainty for the success of an online community because of the intrinsic nature of online communication. The lack of a social context, the conflict between the flexible learning pace and the sharing of ideas on the same topic at the same time, and the natural preference of teachers for face-to-face communication set up a broad limitation on the effectiveness of online communication. In addition, the difficulty of explaining questions and answers over a text-based asynchronous communication environment, particularly for the topics such as ICT, likely does not encourage in-service teachers to access cyberspace to obtain or offer help within their busy time schedule.

Having the difficulty of online community building been described, we want to provide some suggestions, indicated by our study, to magnify the possibility of the success in creating and maintaining online and offline teacher communities. In this study, the course instructor effectively interacted with individual participants, but was not very successful in helping participants to build a learning partnership with others. By being easily available to individual participants, the instructor might have unintentionally undermined the effort to create an online learning community.

To help ameliorate this, an online instructor could consider acting as a facilitator of online discussion more than as an answer provider. He or she should increase his or her interaction with groups, rather than only focus on individuals. Course participants who have questions should be requested to consult with their group partners before approaching the instructor for a solution. For some critical issues or questions raised by a group, the course instructor should post information to all participants' attention and get other groups involved in the discussion as well. This study also found that the within-school pairing and face-to-face sessions very likely have positive impact on the success of creating learning communities. This suggests that future online ICT professional development programs should enroll more than one teacher from a school or community and incorporate face-to-face sessions, when possible. Also, as some participants suggested, pairing teachers with similar subject backgrounds may help the discussion become more meaningful and effective. Establishing stricter timelines for the course so most of participants are progressing more or less at the same speed could make it easier to bring participants together for discussion; however, this needs to be approached with careful planning because strict timelines will likely compete with the flexibility of online learning which in-service teachers highly value. The best balance between these two must be sought.

Time issue is well recognized as one of the most significant contextual barriers for in-service teachers to form learning communities. This is confirmed by our study. In order to keep participants' momentum built during professional development program and to attract other teachers to join in the community of learning and practice as well, the school administration needs to carefully deal with the time issue.

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