Supervision of Pre-service Teacher: Using Internet Collaborative Tools to Support Their Return to Their Region of Origin

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Abstract

As part of the bachelor's degree in Secondary Education at Laval University, students have the option of completing a final practicum in their region of origin. The structure of this final practicum requires new configurations in order to meet not only the requirements of practical training in teaching, but also the needs of remote communities who want to see students return home after their studies. This article aims to examine the various mechanisms put in place during an experimental design for academic proximal supervision of a practicum conducted with the assistance of information technology and communication, in particular video-conferencing and an electronic forum. The results show that video-conferencing can reproduce the main steps of the practicum and the electronic forum increases the interactions between pre-service teachers. The practice of university supervisor is transformed while preserving the triad between him, the cooperative teacher and pre-service teacher.

Keywords: Initial teacher education, educational supervision, video-conferencing, reflective practice, design experiment

Résumé

Dans le cadre du baccalauréat en enseignement secondaire à l'Université Laval, les étudiants ont la possibilité d'effectuer un stage de fin d'année dans leur région d'origine . La structure de ce stage nécessite de nouvelles configurations afin de répondre non seulement aux exigences de la formation pratique pour l'enseignement, mais aussi aux besoins des communautés isolées qui aimeraient voir les étudiants rentrer chez eux après leurs études. Cet article a pour but d'examiner les différents mécanismes mis en place au cours d'une conception expérimentale pour l'encadrement proximal académique d'un stage effectué avec l'aide des technologies de l'information et de la communication, en particulier la vidéoconférence et un forum électronique. Les résultats montrent que la vidéoconférence peut reproduire les principales étapes du stage et le forum électronique augmente les interactions entre les enseignants en formation. Le rôle du superviseur académique est transformé tout en préservant la triade entre lui, l'enseignant coopératif et l'enseignant en formation.

Mots clés: formation initiale des enseignants, encadrement pédagogique, vidéoconférence, pratique réflexive, conception expérimentale

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Introduction

The province of Quebec has a multitude of schools spread over a vast territory; many of these schools have student populations of less than 100 students due to their geographic dispersion. Also, the population decline experienced by Quebec since 1997 has led to significant changes since the reality experienced by schools in Quebec will be an average decrease of 20% of the student population until 2014 (MEQ, 2004). This population decline is not accompanied by a surplus of teachers available in the network because a third of teachers have reached the age of retirement. Furthermore, changes to the principles and rules governing educational services following the curriculum reform have resulted in a shortfall of teachers in some areas—particularly in remote areas, but also in Montreal and its suburbs. Some disciplines in high school—such as mathematics, science and technology, and English—suffer from a shortage of qualified teachers that will not be remedied until 2014 according to forecasts made by the Ministry of Education (MEQ, 2004).

This major deficiency in the availability of qualified teachers for schools (teachers who held a teaching certificate) was the subject of debates. In order to respond to this problem, the Ministry of Education provided provisional authorizations that allowed those holding bachelor degrees in disciplines consistent with the instructional curriculum of Quebec school to teach. This increase of authorizations for teaching made it possible to meet the needs identified by both school boards, school administrators, and individual teachers' unions (CSQ, 2006). In addition, undergraduate students in high school teacher education could now obtain teaching contracts at the beginning of the fourth year of their bachelor degree.

All these measures to facilitate the entry into the teaching profession had the effect of changing the demands of students facing the completion of their final practicum in high school teacher education at Laval University in Quebec City. At this university, practica of pre-service teachers had been conducted in a network of associated schools since the reform of teacher training in 1994 and, initially, practica outside of Quebec city were not accepted. Associated schools were favoured and given the formal partnership that united them to the university in order to provide quality practical training to future teachers in a collaborative manner through the university-school partnership. More recently, some pre-service teachers also secured jobs even before obtaining their teaching permit (practicum concurrent with employment). It was in this context that in 2005, the concept of a final practicum 4 in the region of origin (PRO) was established for a variety of reasons, including meeting the needs of school communities in remote areas in matters pertaining to recruiting qualified teachers and the students' desire to return to their hometown.

Our article focuses on understanding the development of a design for a practicum that pre-service teachers undertook in their regions of origin in the context of a 15-week practicum. This practicum consisted of taking ownership of half of the associate teacher's duties and the other half of the time was devoted to the future teacher's development of the reflexive practice. This was a challenge in practical training for pre-service teacher at this university because students are closely supervised in the regular context.[1] How could students in remote areas be closely supervised in order to respect the requirements of the practicum? The new access to broadband

[1] The methodology section will explain the supervision offered to pre-service teachers in details.

Internet in every rural community in the province of Quebec allowed researchers to imagine new possibilities for remote supervision of the pre-service teachers.

Indeed, in 2001, the Ministère de l'Éducation, du Loisir et du Sport (MELS) was establishing the Remote Networked Schools (RNS) initiative that aimed to enrich the learning environment of small rural schools with the assistance of information technology and communication technologies (ICT). The implementation of the Connected Villages program gave most small primary and secondary schools access to broadband Internet directly in their schools, and classes used this technology to conduct video-conferences—among other activities—between remote schools (Allaire et al., 2006; Laferrière et al., 2004). The RNS initiative created important links between participating school boards and universities; from 2005 onwards, it was possible to consider a collaboration at the initial teacher training level. Several remote school boards also made this request so that future teachers of these school boards would be prepared to intervene in local RNS classes (Laferrière et al., 2004).

This article will focus on understanding the impacts and opportunities of remote supervision in an iterative collaborative model, which is a model that investigates possibilities while making readjustments based on generated observations. What uses of the Internet could help to adequately support the process of educational supervision in order to ensure quality in a long-distance relationship? What connections could be made between technological tools used in the RNS initiative and the need for supervision of students? Finally, how was the practice of supervision modified, in the sense that the dynamics of mediation were not uniquely governed by a face-to-face presence?

Literature Review

Whether supervision is carried out remotely or on site, the issue of teacher supervision remains the same—that of linking, in a critical and analytical way, theoretical knowledge with practical knowledge in frequent exercises of reflective practice (Bereiter, 2002; Holmes Group, 1990; Pellerin, 2010; Schön, 1983). The supervision of a student teacher is realized in a triad mode with a university supervisor and associate teacher to achieve a better understanding of the complexity of the teaching profession. The final practicum allows the future teacher to implement the learning acquired at the university in a reflexive dynamic with two teacher educators. Even if the relationship between the partners in the triad of the teaching practicum is done remotely, studies have demonstrated the relevance of technological tools to facilitate long-distance contacts when traveling was not possible or desired (Anderson, 2006; Gammon, Sarah, & Bergvik Hoifdot, 1998; Knowlton & Chaffin, 2007; Pellerin, 2010; Nault & Nault, 2001).

Many studies have focused on understanding the different affordances of communication between face-to-face communication and using video-conferencing and other technological tools (Whittaker, 2003); others have described the impact on different users in order to better define the uses for technology that better address the user. Significant results, notably in telemedicine, identified criteria for remote supervision to be effective. These criteria included the setting up of an introductory face-to-face encounter in order to establish trust and respect between the partners (Gammon et al., 1998). Such a first meeting is an important element since in many cases, the use of a video-conferencing system leads to negative perceptions about the closeness that participants may have during their conversations. In particular, the tool is not perceived as being very effective in decoding non-verbal messages (Doherty-Sneddon, Anderson, O'Malley, & Bruce Langston, 2007; Grayson & Coventry, 1998) while at the same time promoting a conversational structure of taking turns that hinders a certain level of spontaneity in the participants' speech

(Olson & Olson, 2000; Whittaker, 2003). For the supervisor in this case, the use of technology in his or her supervision of the student requires an adaptation and the supervisor must often find new ways to ensure that he or she is being understood by the participants (Olson & Olson, 2000; Pellerin, 2010). The adaptation is also related to the resolution of technical problems or the understanding of the amount of bandwidth available for video-conferencing to be functional between the different participants. Finally, the use of technology tools must also put forward the importance of collaboration, since some studies show that remote work can sometimes cause frustration more rapidly as some users feel that their distant collaborators are less helpful and useful than those present on-site (Herbselb, Mockus, Finholt, & Griner, 2000).

Despite some limitations of communication by video-conferencing, remote communication helps develop positive communication skills among participants while having an impact on subsequent face-to-face relationships (Gammon et al., 1998). In some cases, the close relationship between the participants who used video-conferencing showed the same efficacy, given that some stimuli present in face-to-face conversations are absent by video-conference (Grayson & Coventry, 1998). In the case of distributed teams working on problem-solving, it has been shown that teams that used video-conferencing achieved the same results as those working face-to-face (Anderson, 2006).

In education, learning environments that use video-conferencing between associate teachers, student teachers, and supervisors from universities allow a higher level of engagement between the participants than in traditional environments (Dal Bello, Knowlton, & Chaffin, 2007). This is explained notably by a greater necessity in these environments to be informed and conscious of the classroom students' learning process and thus the learning focus stays mainly on this aspect compared to traditional supervision contexts (Knowlton, Rowland, Knowlton, & Chaffin, 2005). Moreover, when it is time to observe the pre-service teacher in action in class, the use of video-conferences is perceived as less intrusive and less disruptive than the on-site presence of the university supervisor (Dal Bello et al., 2007; McDevitt, 1996). The sequence observed is more representative of the actions of the student-teacher because the students come to forget about the camera, especially in the case of a system of video-conferencing that is present on the computer of the pre-service teacher. In the case of university supervisors in the domain of social work, these professionals have admitted to having greater access to a multitude of information from the emotional point of view of their student-teachers through the use of video-conferencing, which they did not have access to in face-to-face communication because the student-teacher acted more naturally (Davis, 2001). In this way, the functioning of many practica that use video-conferencing (medicine, psychiatry, psychology, guidance, and social work among others) closely resembles practica in the educational sciences with support in a triad by the practice field and the research field in order to arrive at a better mediation of knowledge (Panos, 2005).

What emerges from communication at a distance supported by technology is the crucial role of the interactivity between the participants, whether it is using a synchronous or asynchronous medium (Whittaker, 2003). Furthermore, the combination of oral and written interactions permits an important deepening in the participants' discourse, with the use of video-conferencing allowing the participants to present problems directly and habitually in a more brief manner, whereas the written interactions (by e-mail or electronic forum) give access to a wealth of information that is much better described and recorded by the participants (Newlands, Anderson, & Mullin, 2003). The use of electronic forums in the context of practica in education has already shown pertinent results (Allaire, 2008; Laferrière & Nizet, 2006), notably with respect to the affordances to support and observe the development of the student-teachers'

reflective practice. For the student-teachers who used an electronic forum for their final practicum in their bachelor's degree, their use of the forum permitted the support of the students on three levels: the integration into the milieu of practice, the reflection on one's action, and the post-action reflection. In the logic of close supervision and of responses to contextual needs, the use of the electronic forum in the context of this study permitted a collective construction of a discourse on the appropriation of the craft of teaching (Allaire, 2008). Electronic forums and the communities that use them to share ideas, problems, successes, and pedagogical resources are a way of overcoming geographic constraints of distance and isolation (Harasim, Hiltz, Teles, & Turoff, 1995).

Methodology

This study is a design experiment (Design-Based Research Collective [DBRC], 2003) conducted since 2007 in high schools in Quebec. The design experiment permits the understanding of when, how, and why innovations work in practice (Brown & Campione, 1994), while allowing for a better understanding of the relationship between educational theory, design artefacts, and practice. In our context, it consists of understanding how the practice of supervision was carried out using information technology and communication and how this innovation was established in the practice of other practicum supervisors. Thus, we are concerned with the practice put in place by two supervisors in the five years of experimentation. Therefore, the study consists therefore observing the evolution of the practice with the aid of technological tools, and also of identifying the challenges that persist in this mode of supervision.

The Specific Context of the Final Practicum

This practicum runs in the seventh session of the undergraduate program and has a duration of 15 weeks. Pre-service teachers begin the school year with their associate teachers and then assume responsibility for half of the teaching tasks through December. During their practicum, the pre-service teacher is responsible for the entire act of teaching: planning the learning activities, teaching, assessment, and monitoring every student under his responsibility.

We describe the support provided by the university supervisors to pre-service teachers as being close due to the number of professional development activities offered by the supervisors to future teachers during the internship. These professional development activities are performed individually while others are performed among a group of pre-service teachers. Thus, the pre-service teachers develop an internship project in which they establish a plan to 1) foster students' learning (pre-service teacher epistemological belief about learning and teaching) and 2) develop their own professional competencies about teaching based on professional skills prescribed by the Ministry of Education (MEQ, 2001). There are 12 professional competencies that address the profession's four main categories: fundamentals, teaching acts, social and academic contexts, and professional identity.

Future teachers are accompanied individually each week by the university supervisor to measure progress in skills development. The associate teacher and supervisor validate planning and suggest possible improvements. Subsequently, students are closely supervised to obtain frequent and constructive feedback. The pre-service teachers are always in a group of at least three to encourage sharing of best practices and experiences. The university supervisor provides a total of three seminars for the analysis of teaching practice. At the end of the practicum, the pre-service teachers should demonstrate their cumulative learning achieved during all practica in their undergraduate program by delivering a fifteen minute presentation in front of their associate

teacher, university supervisor, and school principal. Following the presentation, the three evaluators ask questions to the future teachers to better understand their conception of the professional role of a teacher. Finally, although pre-service teachers must teach to develop their professional competencies, they are never left alone for long periods and receive continuous feedback from the associate teacher and university supervisor.

The challenge of remote supervision for the university supervisor was therefore mainly in providing proximal support to ensure the mediation of the theoretical and practical context of the practicum.

The Design of the Study

The study was conducted according to three iterations that progressed at the same time as the technological capacity available in Quebec schools; that is to say, that video-conferencing tools became more accessible and flexible without having to call upon an expertise in technology that was too advanced for either the associate teachers, university supervisors, or student teachers. Table 1 resumes the three iterations put in place, depending on the technological tools and the number of participants involved. For the synchronous interaction, three video-conference tools were used among the iterations: iVisit, Skype, and VIA. Those video-conference tools were available because of the RNS initiative and it was decided, in collaboration with the schools, to use them to ensure a more realistic transition between teacher training and professional integration in those small rural schools. On the level of written interactions, it's the *Knowledge Forum* software that was chosen and remained the favoured choice throughout the designs put in place because it responded well to the pedagogical demands of a teaching practicum. From a very pragmatic point of view, it was a tool that was well-known by the student-teachers because it was used in the context of their initial training courses (Hamel, Laferrière, & Gervais, 2011). Its efficiency in facilitating the reflective practice of the student-teachers and the students was the object of studies in teaching and in other domains (Allaire, 2008; Allaire & Hamel, 2010; Lax, Singh, Tamber, & Hyon, 2009). Through its capabilities, this electronic forum allows the collective discourse of the student-teachers to progress, notably with the aid of well-defined scaffolds (Brush & Saye, 2002) in order to facilitate their reflective practice. Other capabilities permit the highlighting of key words, the evaluation of one's participation and one's place in the collective discourse, and the creation of synthesis notes to better target the next collective steps to take for the comprehension of common goals. Finally, even though it is a forum available on the Internet, it is a private and protected environment to which only the student-teachers and their associate teachers have access.

Table 1.

Iterations, Tools Used and the Number of Participants Involved.

	1st iteration (2007)	2nd iteration (2008)	3rd iteration (2009-10)
Number of supervisors	1	2	2
Number of student-teachers	3	9	31
Tools of mediation and collaboration	**Oral interactions**		
	Skype and iVisit	Skype	Skype and VIA
	Written interactions		
	Knowledge Forum	Knowledge Forum	Knowledge Forum

A fourth iteration is currently being tested that consists of a more expansive design because it now includes 13 supervisors and over 60 students returning to their hometowns that are in elementary schools as well has high school teaching. However, this article will not take this iteration into consideration because that experimentation is currently in progress.

Data collection. Data collection was performed from semi-structured interviews with the university supervisors to identify the progress in the implementation of the design since it was their practice that was further transformed in the final practicum. We also conducted an electronic survey with associate teachers and pre-service teachers in order to ascertain their satisfaction with the distance supervision and to identify the remaining challenges before implementation with a large number of university supervisors.

Data analysis. Qualitative analyses taken verbatim from interviews with the two supervisors were made using TAMS Analyzer. The supervisors' discourse was coded according to thematic units of meaning; that is, the dissection of the transcript was made according to ideas (one unit per idea) expressed by participants regarding each of the themes identified (Krippendorf, 2004). Thematic units of meaning are rich in information, and so are patterns found (Moustakas, 2000). The same was done with the electronic form with the open questions to student-teachers and cooperative teachers about their satisfaction with the remote supervision and the challenges they identified.

Results and Discussion

The results show that three main themes emerged from the analysis of discourse among study participants: the relevance of the technological tool among the iterations, the innovation in the practice, and the link between universities and remote regions.

Video-conference Tools that Facilitate Better Synchronous Supervision

The evolution of technologies available, mainly the video-conference, throughout the experiment has facilitated support and feedback provided to the pre-service teachers. In fact, the first tool used (iVisit) required authorizations so that the associate teachers and student-teachers could freely use those applications on their computers in the classroom to meet the university

supervisor. Even more, the use of iVisit was difficult between school boards because the protocol used by the application prevented the participants from communicating amongst themselves. With regards to the free application Skype, in 2007 and in 2008, it was not possible to hold a conference call with several participants while having their video image. Therefore, participants had to content themselves with only its audio-communication features. Every pre-service teacher concurred that it was less interesting to do the group seminar without seeing their peers. It appears that the arrival in 2009 of a video-conferencing application available on the Internet such as VIA greatly improved the quality and the possibilities for the practicum in the region of origin, the tools allowing the supervisors to concentrate on aspects other than evaluation, and to include continuous professional development (Nault & Nault, 2001). To begin, this video-conferencing system allowed the re-establishment of seminars in a systematic manner so that all the student-teachers could reflect together about the common or shared problems while having visual contact with their peers. The group seminars planned could be given in a fluid and realistic enough manner from the conversational point of view. Also, the university supervisors had observed that in their own practice, mediation by video-conference prevented several effects of noise and distractions that are present in face-to-face conversations during the seminar.

Although the tool was perceived as being easier to use by the university supervisors than the other members of the triad, there were some challenges encountered when using the program. For example, each participant had to adapt to both a discourse that was slightly less spontaneous than in face-to-face communication, as well as to an increase in the amount of non-verbal cues offered to the speaker to signal the understanding of the interlocutor.

On the other hand, the two video-conferences tools permitted easily enough the observation of the pre-service teachers in action in their class and the meeting between the triad of the student, associate teacher, and the university supervisor. The supervisors sometimes had difficulty in seeing the details of students' work with the pre-service teachers. The academic supervisors often sought the assistance of the associate teacher in order to relocate the video-camera in order to see more of the pre-service teacher's interaction with students. However, according to the pre-service teachers and associate teachers, this adjustment sometimes influenced the observation since the students became more aware of the ongoing process. As Dal Bello (2004) had shown, classroom observations must be as inconspicuous as possible if observers want to witness realistic situations.

Finally, the new video-conference application has an option to record meetings, which made it possible to observe student-teachers in action in class without being present in real-time. The student-teachers could have access to the recordings afterwards in order to analyze their classroom practice. Skype always remained a part of the practice because the student-teachers mentioned that it allowed them to quickly see if their supervisor was available during the day and communicate quickly with her, either by instant-messaging or (when this feature became available) by video-call.

Reproducing the Practicum Collaboration in Remote Area Using the Electronic Forum

In the original practicum at Laval University, students gathered in schools in a group of at least three pre-service teachers to avoid isolation, as well as to facilitate exchange for their professional development. When used to achieve similar goals, the electronic forum was successful in reproducing this learning community for remote pre-service teachers. It appeared in the discourse that pre-service teachers all agree that the forum allowed them to remain focused on the learning acquired in training while finding there a needed sense of collegiality among colleagues. Some nuanced their point of view, even specifying that the tool was valuable but it

was a more demanding exercise than the usual exchange experienced previously in prior practicum. For many pre-service teachers, the act of translating their ideas into writing was a more demanding exercise at the cognitive level and they suggested that the assessment took that into account. Several of them mentioned that ideas exchanged orally are not stored permanently but writing remains; thus it was sometimes stressful to exchange with their colleagues, making sure that their ideas were valuable for the entire community. Pre-service teachers saw several advantages to using the tool, including the breaking of professional isolation and a shared space for reflective practice on teaching. They mentioned that their contributions on the forum were based on the sharing of ideas according to their point of view stemming not only from experiences lived and learning acquired during their practicum, but also from their definition of their professional identity and the application of theories learned. Most mentioned that they did not have to censor themselves because a sense of trust between participants existed and, furthermore, this area of cooperation was seen as academic and hence formal.

For the university supervisor, the electronic forum allowed an effective compromise in the management and the mediation of different pedagogical beliefs upon which the student-teachers reflected. This compromise was achieved because the supervisor did not position himself as being the holder of knowledge; instead, he left the majority of the writing space to the students-teachers to expose their beliefs and perceptions, without the supervisor necessarily acting as a judge. The supervisors contributed more on the level of the mediation of collective knowledge and with feedback on the theoretical knowledge related to the ideas expressed by the student-teachers. In their practice, during the meetings in triads, the university supervisors returned to certain ideas put forth by the student-teachers in order to guide them in their next steps as much in class as on their level of reflective practice in their written interactions on the forum. Therefore, the university supervisor found the electronic forum very useful in contributing to the construction of the student-teachers' professional identity mainly because of the low interaction possible between them in the context of the remote practicum. Thus, as the students-teachers found, the electronic forum consisted of a common place for the sharing of professional development in the context.

For the university supervisor, writing—be it by e-mail or in the electronic forum—was more of a form of mediation used in the practicum in the region of origin than in the regular practicum. The pre-service teachers in the region of origin wrote extensively in the forum (on average 15 pages each), in addition to completing the assigned work and specifying the actions and concepts in writing to the supervisor. Furthermore, after observing the pre-service teacher in class, the supervisor wrote feedback and questions by e-mail, resulting in several writing exchanges between them. Usually, this feedback was done orally, but supervisors found that the level of depth was more significant using written communication. Reflection on practice requires time and flexibility, and it appeared to the university supervisor that this flexibility could be achieved in a written dialogue. Hence, while being at different locations, the relationship between the university supervisor and the pre-service teacher established itself in a different proximity; however, this lesser proximity was nevertheless close in the pedagogical relationship and the mediation. Despite the efficiency of the technological tools, both pre-service teachers and associated teachers welcomed a formal visit by the university supervisor at the school in order to make observations on-the-spot and have face-to-face interaction.

Continuity in the Act of Mediation

The use of the Internet had a major impact on the practice of university supervisors, particularly with regard to providing support to pre-service teachers during their integration into the practice setting. In fact, accustomed to working with the field of practice habitually at the

same high school, it was necessary for university supervisors to change their approach with the new schools because these schools were often remote and therefore had previously only few, if any, occasions to train student-teachers. Thus, the dynamics of professional development were very different because the associate teachers involved had to learn everything about the practice of providing support for student-teachers and the supervisors themselves had to learn everything about the cultural context of the school, its customs, and its rules. Both the university supervisors and the associate teachers faced a learning curve, and this learning required an important process of collaboration rather than a hierarchical dynamic. The role of the associate teacher, who was involved in the field observations of the pre-service teacher in the classroom and his lesson planning, was even more crucial since he was the first actor present on a daily basis with him. The role of the university supervisor anchored itself more in the mediation and the identification of theoretical knowledge by stimulating reflective practice in the student-teacher, as suggested by Rousseau and St-Pierre (2002). In this regard, it was possible to preserve the triad in the last iteration, which appeared to be a result in itself given its importance in the practicum as outlined by Gervais and Desrosiers (2005). For all members of the triad, especially the university supervisor and the associate teachers, the preservation of the traid was a large improvement over the iterations.

In the context of pre-service teachers' return to their regions of origin, the supervisor cannot claim to know the culture of each school establishment in which he intervenes for the student-teacher, nor can the associate teacher. So for the university supervisor, it was therefore necessary to adjust the practicum, by trial and error in the first iteration, not only in order to respect the continuum of the fourth practicum, but also to ensure that there was a certain equity between the practicum in the remote region and the practicum pursued in the region of Quebec city. The practicum in the region of origin had to be as demanding as the one in the traditional network of associated schools in the region of Quebec city and respect the established norms, all the while asking the associate teacher to adapt to change at an accelerated pace.[2] Often, the cooperative teachers' involvement consisted of introducing technologies into their teaching practice. All the cooperative teachers decided to take part in the training of a student-teacher because it was very rare for them to have such an opportunity, given their geographic situation.

The university supervisor's act of mediation appears to have remained intact for every member of the triad, even though new tools participate in this mediation. This finding means that the subjectivity and the interpretation that each student faces with respect to his or her knowledge, epistemological stance, and capacity for action in class are equally challenges to address whether one is communicating using a video-conference or face-to-face. It is therefore important to continue to place the pre-service teacher in his or her zone of proximal development in order to ensure a balance of educational concepts (Boutet, 2002), even if the relationship is mediated by the computer. According to the discourse of the associate teacher, most found they had more interaction with the university supervisor through the video-conferencing format as compared to the in-person school visit format. Thus, during the triad meetings, the associate teachers continued to reflect on their role in helping student-teachers to identify the practical knowledge that they acquired as well as their professional competencies that needed further development in order to achieve success in the practicum. The university supervisor continued to place the learner at the heart of the relationship, mediating theoretical and practical knowledge by using theories (Boutet, 2002) to significantly enlighten real-life situations in the classroom.

[2] The associate teachers in the network of associate schools of Laval University participated in training sessions to prepare them for the role of associate teacher, while those from the practicum in the region of origin received training more gradually as their support for their student-teacher progressed.

A Requirement for Greater Autonomy for the Pre-service Teachers

Both the university supervisor and the pre-service teachers agreed on their discourse that the responsibilities of the pre-service teacher were increased because he had to ensure the teaching follow-up not only by his cooperative teacher, but also by the school principal. Furthermore, the pre-service teacher was responsible for ensuring the effective use of the technology. Usually, pre-service teachers had fewer responsibilities in achieving practicum milestones because their university supervisor was often in the school to remind them of the main steps and discuss them with the future teachers. For pre-service teachers in remote practicum, they perceived that they had to act very proactively to inform the university supervisors in sufficient detail about what was happening in the practicum. In the few cases in which collaboration between the associate teacher and the pre-service teacher was difficult, the pre-service teacher had to carry a much heavier responsibility in resolving the issue, although he had the support of the university supervisor.

University-Community Partnership in Remote Regions.

All participants recognize the importance smaller schools' participation in training future teachers in remote regions. By establishing the practicum in a teacher's region of origin, it appears this configuration recognizes the regions' needs with respect to training qualified teachers (Rousseau & St-Pierre, 2002). Furthermore, this new partnership resulted in the widening of the network of schools that know and implement the curriculum of the final practicum. This form of partnership allowed associative teachers to participate in related professional development for this role, and also to be included in a broader effort to develop competencies of accompanying pre-service teachers. In fact, throughout the practicum, associate teachers participated lightly in the formal formation of their role in supporting and guiding pre-service teachers. The future challenge that this study has identified is to increase interaction in such formation so that associate teachers can exchange with colleagues about their role and gain a better understanding of this practice, which is different from their usual role as a teacher in the classroom (Korthagen, 2004). Accessibility to continuous and relevant professional development for the teachers in rural settings is a challenge for most. However, university supervisors and associate teachers believe that their implication in pre-service teacher education is critical and significant.

Conclusion

Establishing a practicum in remote regions could be achieved through progressive iterations, informed by the results and observations from participants. It was necessary for all the members in the triad to transform and adapt a practice of support with the help of technological tools in order to respond to an important need in remote school communities. We are now at a turning point where the practicum's mode of operation in terms of both oral interactions and written ones are of a high quality and meet the requirements of a final teaching practicum that will qualify the students to obtain their license to teach. This explains, moreover, the fourth design implemented currently with a greater number of participants.

The next steps will permit the validation of those preliminary results with a greater number of supervisors as well as further description of the characteristics of a final practicum pursued with the support of technological tools according to the perception and the representations of the member of the triad. These issues are the purpose of the fourth iteration that is in progress until 2013. One of the important results of this study is the possibility of

implementing the final practicum in conditions that are close to those in the practicum in face-to-face delivery. The qualities and the strengths of the practicum in teaching—that is, the triad between the cooperative teacher, the student-teacher, and the university supervisor—could be preserved as well as the observation of the student-teacher in action in class. The evolution of technological tools, combined with the expertise developed in Quebec schools thanks to the implementation of the Remote Networked Schools program, permitted without a doubt the possibility of offering a practicum in remote region that responded to the needs of the school communities while respecting the university's expectations.

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