

# The knowledge-building oriented virtual practicum

Stephane Allaire  
Laval University, Quebec, Canada  
[Stephane.Allaire@fse.ulaval.ca](mailto:Stephane.Allaire@fse.ulaval.ca)

Thérèse Laferrière  
Laval University, Quebec, Canada  
[Therese.Laferriere@fse.ulaval.ca](mailto:Therese.Laferriere@fse.ulaval.ca)

**Abstract:** When preparing to do their student teaching in a knowledge building classroom student teachers must understand enough in advance of and during their time in such classrooms for their learning and for school learners to benefit. The “solution” put forward was to design virtual tours that show examples of these onsite and online environments (knowledge bases/databases) created by classroom- and course-based knowledge building communities. Campus-based and school based teacher educators used virtual tours to create virtual practica aiming at preparing student teachers to be functional in knowledge building classrooms (junior- and high-schools). Four cases are presented. It is its connection to classroom-based knowledge building communities that distinguishes a knowledge-building oriented virtual practicum from other forms of virtual practica. We suggest that a real connection to innovation can be established in a number of other fields that can take advantage of a better integration of theory and practice for professional development.

## Introduction

Schools of Education have been redesigning their teacher education curricula along the Professional Development School Model<sup>1</sup> to be amenable to research on learning and teacher education research. Studies on PDSs stress the principle that the renewal of schools and of professional education must occur in tandem (Goodlad, 1990; Sykes, 1997; Clark, 1999). NCATE (2001) adopted PDS standards that identified critical attributes of a well-functioning PDS among which the learning community and collaboration are of primary relevance for teacher education and professional development. Related indicators include the following ones: 1) there is an inquiry orientation toward teaching and learning; 2) research produces changes that enhance student learning and improve the organizational environment; 3) teacher learning and professional development are integrated into practice; 4) teaching is public practice; 5) knowledge generated in the PDS is disseminated within the school and university and to other schools in the district. A major challenge for successful PDS initiatives is one of scaling them up in order to meet the demand of large numbers of pre-service students at a given university.

The underlying assumption in our work at Laval University, Quebec, Canada, has been that the use of ICTs for transforming educators' practice is best achieved in a PDS context, and that some of these technologies can support an even farther reach of standards. A network of 150 associated schools was established in the mid-nineties, one that remains an organizational innovation on the teacher education Quebec scene. However, substantive pedagogical renewal has proven to be hard to sustain and scale (see also the results of the PT3 Program in the USA) beyond a few protected sites and even in the context of an educational reform that promotes socioconstructivism and the integration of ICTs. Therefore, most pre-service teachers still encounter traditional teaching in their early field experiences. And their student teaching placement is likely to value teacher-centered rather than learner-centered and collaborative approaches. Yet, educational innovation is on the agenda, and ways to counterbalance the weight of tradition must be found. This short paper addresses this need by presenting knowledge-building oriented virtual practica.

---

<sup>1</sup> In the past decade, in over 250 locations around the U.S., university and school-based faculty came together to share responsibility for the clinical supervision of new teachers, the professional development of experienced faculty, the support of research directed at improving practice, and enhanced student learning (Levine and Trachtman, 1997, p. 1).

## Conceptual framework

Virtual learning environments and virtual practica are often designed to provide an alternative to or enrich clinical experience (e.g., in the medical field, Henderson, 2003; in nursing, Hardy, Drury, & Frotjold, 2004; in instructional design, Spector & Wang, 2002; in teacher education, Scordias, Baskerville, & Hoagland (2003), Becking et al, 2003). Schön's (1983) model of reflective practice and Lave and Wenger's (1991) concept of legitimate peripheral participation, which offer theoretical foundations for onsite practica, are applied to online contexts. Findings from teacher professional development (TPD), policy research, and local TPD implementation projects suggest that TPD projects that employ community of practice (CoP) approaches are effective in supporting teachers' adoption of new practices and technologies in the classroom over time (Darling-Hammond & Ball, 1997).

Our own approach is hybrid: virtual practica are designed to prepare pre-service teachers for onsite practica in innovative settings. It is its connection to classroom-based knowledge building communities (KBCs) that distinguishes a knowledge-building oriented virtual practicum from other forms of virtual practica. In a recent note in the Knowledge Society Network (KSN), written in the context of how knowledge building communities may be assessed, Scardamalia (2004) stressed: "Knowledge building may be defined as the production and continual improvement of ideas of value to a community, through means that increase the likelihood that what the community accomplishes will be greater than the sum of individual contributions and part of broader cultural efforts."

The affordances of the hybrid-learning environment are both technical and social, as stated by Little (2003): "The heuristic notion of affordances calls attention to the multiple possibilities made available in and through talk, gestures and material artefacts." (p.920) This requires better attention to human interactions when designing a hybrid-learning environment "since human-computer interaction has focused almost exclusively on single individuals interacting with applications" (Hollan, Hutchins & Kirsh, 1999, p. 21).

## Methodology

*Knowledge building communities.* KBCs may be based in school or university classrooms. The former have foci of inquiry that relate to school curricula and the latter have foci of inquiry that relate to teaching and learning in a student-owned laptop (or networked) classroom. These classrooms are all part of the PDS (a school-within-a-school program (nearly 400 students) at a large secondary school (over 1000 students).

*Participants.* Approximately ten pre-service teachers are invited every semester to join a KBC.

*Affordances.* For better preparing student teachers to be effective in the innovative classroom where they will do a five-week or fifteen-week long student teaching, virtual practica are designed. They take advantage of virtual tours that present examples of onsite and online environments (knowledge bases/databases) created by classroom- and course-based knowledge building communities, and are tailored to individual needs by the clinical supervisor. Exemplars of virtual tours are available at <http://ikit.org/mvt/> and virtual practica can be accessed at the following url: <http://www.tact.fse.ulaval.ca/barcelone/sitovv/prac2f.html>

*Research questions.* What are the circumstances of use of a virtual practicum by the clinical supervisor? What are the benefits?

*Data gathering.* Direct observation was found too constraining. Think-aloud protocols did not deliver much data. Ethnographic data was gathered through field notes, written reflective analysis, and interviews.

*Data analysis.* Four types of circumstances of use were identified using qualitative analysis procedures, and cases were developed independently of student teachers' characteristics. Benefits were also identified through qualitative data analysis, and related to student teachers' characteristics as described in the cases below.

## Results

### Circumstances of use

The following cases describe four sets of circumstances of use of virtual practica:

*Case 1: The student teacher is a newcomer to student-own laptop classrooms.* He or she did his or her early field experiences and/or five-week student teaching in traditional classrooms, and felt uneasy with the prevailing classroom organization and management. Instead of leaving the teacher education program altogether, he or she decided to apply for a more innovative field placement for doing his or her fifteen-week student teaching. For the student teacher's success in the innovative setting, the clinical supervisor's decision to accept him or her bears the obligation to offer additional preparation onsite and online activities.

*Case 2: The intellectually oriented student teacher.* He or she understands theoretical foundations well and academic results are evidence of that. However, the student teacher has difficulty relating concepts and principles to innovative classroom practice. Therefore, the student teacher does not really master the language of the community of practice he or she has joined.

*Case 3: The technologically competent student teacher.* He or she is knowledgeable as regards computers, and has been interested in human-computer interaction. The student teacher is now getting more interested in computer-mediated social interaction but needs to develop a socially-oriented networking culture, and pedagogical imagination when it comes to the integration of ICTs to teaching and learning.

*Case 4: The student teacher is not acquainted with the learning sciences.* He or she is lacking the theoretical foundations behind knowledge building communities necessary to understand the purpose and make sense of the activity he or she is to engage into as part of his or her student teaching.

These cases are not mutually exclusive, and the clinical supervisor may be aware of more than one set of circumstances when designing a virtual practicum for a student teacher or a group of student teachers.

### Benefits

Case 1 and case 2 student teachers identified benefits such as the following ones:

Case 1:

*I was able to compare what I knew with the knowledge that graduating students have.*

*As I did the virtual practicum, I got ideas regarding what to do with school learners using the same tool!*

*During virtual practica, I had the impression that I was getting a more comprehensive experience in secondary teaching. I questioned myself as regards students inquiring into real problems, how much agency students should have in planning an inquiry, what is mentorship, what knowledge building entails. I would not have questioned myself as much without the practica.*

Case 2:

*I saw new possibilities in the use of Knowledge Forum, including ways of bringing new knowledge to participants.*

*I got some ideas about what to do in the classroom.*

*Scaffolds helped give breadth and depth to what knowledge building means.*

*During the virtual practicum, I questioned myself as regards to how I could engage students in knowledge building on a daily basis. I wanted to use Knowledge Forum to its fullest but without constraining students*

*too much. Now I see ways of engaging students in knowledge building through real problems, questions or themes they are interested in. I want them to write contributions that will be evidence-based and to build on one another's contributions.*

At this point, we cannot report benefits that relate primarily to student teachers belonging to case 3 and case 4. All student teachers' statements could easily be related to case 1 and case 2 when taking student characteristics into consideration.

## Next steps

To continue gathering data on virtual practica and their circumstances of use, and regarding their usefulness in different sets of circumstances (innovative classroom context).

To expand the use of virtual practica to other innovative settings (schools and other workplaces). Will case 3 reveal to be a distinctive relevant case in further inquiries, and will virtual practica be beneficial in case 3 set of circumstances? Will students teachers report benefits related primarily to case 4?

## References

- Becking, D., Berkel, T., Betermieux, S., Clossen, M., Feldmann, B., Rademacher, G., & Schlageter, G. (2003). Altering the Roles of Learners and Tutors in a Virtual Practical Training by Means of Roleplaying. *World Conference on Educational Multimedia, Hypermedia and Telecommunications 2003*(1), 2278-2281. Available: <http://dl.aace.org/13226> [Accessed 18 December 2004].
- Clark, R. W. (1999). *Effective professional development schools*. Agenda for education in a democracy, vol 3. San Francisco: Jossey-Bass Publishers.
- Goodlad, J. I. (1991). *Teachers for our nation's schools*. San Francisco: Jossey-Bass.
- Darling-Hammond, L. & Ball, D. L. (1997, June). Teaching for high standards: What policymakers need to know and be able to do. Available at: <http://www.negp.gov/reports/highstds.htm> [Accessed 22 December 2004].
- Hardy, J., Drury, P., & Frotjold, A. (2004). A Virtual Health Environment Network System (VHE-NS): development, implementation and evaluation.. *World Conference on Educational Multimedia, Hypermedia and Telecommunications 2004*(1), 4954-4960. [Online]. Available: <http://dl.aace.org/1>
- Henderson, J. (2003). Comprehensive Clinical Education Using "Advanced" Multimedia: The Virtual Practicum. *World Conference on E-Learning in Corp., Govt., Health., & Higher Ed. 2003*(1), 1309-1316. [Online]. Available: <http://dl.aace.org/13913> [Accessed 6 January 2005].
- Hollan, J., Hutchins, E., & Kirsh, D. (1999). Distributed cognition: A new foundation for human-computer interaction research. *Draft Submission for TOCHI Special Issue on Human-Computer Interaction in the New Millennium*.
- Lave, J. & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge: Cambridge University Press.
- Levine, M., & Trachtman, R. (Eds.) (1997). *Making professional development schools work*. New York: Teachers College Press.
- Little, J.W. (2003). Inside Teacher Community: Representations of Classroom Practice. *Teachers College Record*, 105 (6), 913-945.
- NCATE (2001). Professional Development School Standards. Available: [http://www.ncate.org/resources/m\\_resources.htm#pdsres](http://www.ncate.org/resources/m_resources.htm#pdsres) [Accessed 18 December 2004].

Sykes, G. (1997). Worthy of the name: Standards for professional development schools. In Levine, M., & Trachtman, R. (Eds.). *Making professional development schools work: Politics, practice, and policy* (pp. 159-181). New York: Teachers College Press.

Scardamalia, M. (2004). Note Evaluation of knowledge building communities. View Virtual Meeting 23: International design experiment: Assessment of knowledge building. Knowledge Society Network.

Schön, D. A. (1983). *The reflective practitioner: How professionals think in action*. New York: Basic Books.

Scordias, M., Baskerville, B., & Hoagland, C. (2003). Classroom Observations: Virtual Visits. *Society for Information Technology and Teacher Education International Conference 2003* (1), 1866-1868. [Online]. Available: <http://dl.aace.org/12080>

Spector, J., & Wang, X. (2002). Virtual Projects in Distributed Learning Environments. *World Conference on E-Learning in Corp., Govt., Health., & Higher Ed.* 2002(1), 2368-2371. [Online]. Available: <http://dl.aace.org/9829> [Accessed 10 January 2005].