THE IMPACT OF ONLINE TEACHING VIDEOS ON THE DEVELOPMENT OF SELF-EFFICACY BELIEFS OF CANADIAN PRE-SERVICE TEACHERS

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Abstract

One of the major challenges in teacher training programs is the gap between the theory that is presented to pre-service teachers and actual classroom practice. Many researchers, educators, and pre-service teachers have emphasized the difficulty of linking theory and practice in teacher education programs. The purpose of this study is to better understand the impact of online teaching videos on the development of self-efficacy beliefs of pre-service teachers. Over 400 student teachers participated in this study. Statistical analyses of questionnaires were conducted to assess the impact of online teaching videos. Our results reveal that online videos indeed impact the self-efficacy beliefs of pre-service teachers. These results have important implications for teacher trainers, school principals, and policy makers.

Introduction
ICT, Videos, and Education: A Century of Promises

One day, people will learn through electronic circuits.

— Marshall McLuhan, 1965

Marshall McLuhan, a Canadian philosopher, showed great foresight when, in the 1960s, he claimed that technologies would one day play a crucial role in education (Garlock & Soles, 1965). But more than 50 years before McLuhan, another visionary, Thomas Edison, had already predicted a great future for technologies in schools. In fact, a few years after making an educational film in 1911, Thomas Edison proclaimed: "Books will soon be obsolete in schools [. . .] It is possible to teach every branch of human knowledge with the motion picture" (1913). Since Edison's prediction that teaching would be revolutionized by films (or videos), the integration of technologies in education has gone through many transformations and developments, including the use of television, videos, computers, and information and communication technologies (ICT).

Thus, for about a century, technologies have been promised a major role in education. However, since the early 1980s when, for the only time in its history, *Time Magazine* departed from its annual practice of naming a "Person of the Year" and named a

"Machine of the Year," the computer and the Internet have become increasingly widespread in schools. In his introduction, *Time* publisher John A. Meyers wrote, "Several human candidates might have represented 1982, but none symbolized the past year more richly, or will be viewed by history as more significant, than a machine: the computer" (1983). Does this mean that technologies have fulfilled their promise to education? Apparently not, due not so much to their technical performance as to the use that has been made of them. For example, the digital video has simplified the process of creating, viewing, and sharing as never before. This opens the way to almost limitless educational potential. However, the actual impact on education is not yet known.

Problem

This section presents two major challenges in teacher education programs in Canada: the dichotomy between theory and practice in teacher education programs and the shortage of French-speaking teachers. We strongly believe that the use of online teaching videos could help overcome both these challenges.

The Dichotomy between Theory and Practice in Teacher Education Programs

One of the major challenges in teacher education programs is the so-called dichotomy between theory and practice, that is, the gap between the theory that is presented to pre-service teachers at university and the classroom they face during their practicum. In fact, researchers, educators, and pre-service teachers have frequently pointed out the difficulty of linking theory and practice in teacher education programs. This difficulty largely stems from the way that theory is presented, usually in an abstract, de-contextualized manner that is out of touch with reality and hence irrelevant to everyday teaching practice. This clear-cut, simplified, denaturalized, and often prescriptive approach appears to be no match for the "messy, indeterminate situations" of the real classroom (Schön, 1987, p. 4) that teachers deal with every day, and that require a combination of knowledge, open-mindedness, insight, and creativity.

It is usually during the practicum that pre-service teachers feel this discrepancy between what they were taught at university and what the associate teacher working in the high school or elementary school classroom does or claims to do, typically relying solely on hard-earned experience. Consequently, student teachers might feel that they were misled at university and that they have to choose between theory and practice.

Many researchers in North America, Europe, and Asia have come to the conclusion that pre-service teacher education programs continue to prepare teachers in ways that reinforce a transmission model of "teaching as telling" (e.g., Richardson, 2001). The perception of teaching as knowledge transmission is grounded in an epistemology of technical rationality that views teachers and teacher educators as technicians delivering a prescribed curriculum. In this sense, novice teachers are expected to apply what they have learned. This kind of teaching gives little credence to learning through experience or from experienced teachers (Schön, 1983, 1995), and serves instead to reinforce, rather than

help bridge, the dichotomy between theory and practice in teacher education programs. The frequent result is that teacher education programs and the underlying body of knowledge are discredited. Furthermore, with the growing interest in distance teacher training programs, the dichotomy between theory and practice appears to be taking on a new meaning. Often reducing if not eliminating the interactive component of live classrooms, some distance programs are based solely on the transmission model.

Overcoming the Shortage of French-speaking Teachers in Canada

Canada is the world's second largest country by total area, occupying most of northern North America, from the Atlantic Ocean in the east to the Pacific Ocean in the west and north into the Arctic Circle. Across Canada's ten provinces and three territories, education must be offered in either English or French, the country's two official languages. This poses many challenges, particularly in areas or provinces where one language, usually French, is a minority language. For example, in Ontario, Canada's second largest province, there is a substantial shortage of qualified French-speaking teachers. Moreover, although many schools employ some teachers who are not fully qualified, it would be unthinkable to remove them from the classroom for further training, given the lack of teachers. In order to cope with this considerable challenge, we decided to implement a distance education program for minority-language teachers (French-speaking). However, the candidates quickly raised some issues, pointing out that the theoretical material they received needed to be complemented by classroom observations, both to make the course more accessible and to ground the course in reality. Basically, they felt that distance education alone would not fully prepare them to be qualified teachers. They believed that distance education would not give them a proper, professional teacher education. This request raised another substantial challenge in turn, because the program they were following did not provide the classroom observation hours or internship opportunities included in the regular teacher-training programs held at the university. The candidates wanted the classroom brought to them, and at times outside regular school hours.

The solution was to develop an online teaching resource called Cyberprofs.org, which contains over 75 video clips of authentic, in-class pedagogical activities and interactions, with comments by experts, teachers, and pupils. When creating this resource, care was taken to preserve the spontaneity and naturalness of the people and activities filmed — an essential element in vicarious learning through modeling and imitation (Bandura, 1997; Popper & Lipshitz, 1993). The videos can be used to train teachers in Canada and abroad. Each year the site receives over 500,000 visits (www.cyberprofs.org), which clearly underscores the need for this type of online teacher resource.

THEORETICAL FRAMEWORK

Can ICT, and More Precisely Online Videos, Help Bridge the Gap between Theory and Practice?

Schools and universities that provide teacher education programs must cope with a constantly changing environment in terms of the relationship to knowledge. They are

heading into a maelstrom of digital information, computers, and the Internet. Many feel that this technological surge brings countless advantages that schools and universities can and must value while carrying out their fundamental mission of providing education. Today, ICT can deliver universal access to knowledge. This offers schools a power and reach that not even Edison could have imagined. ICT can simultaneously combine text, images, sound, interactivity, and programming. They can also record events and transmit them around the world. Through the integration and judicious use of ICT, the field of education as a whole could expand enormously, while enjoying significantly improved conditions for collaboration, research, and knowledge production.

Impact of Videos on Initial and Ongoing Teacher Training

While Edison's predictions have taken a long time to materialize, we would like to believe that in 2010 we are almost there. From a review of the literature on the use of videos in initial and ongoing teacher training, we have identified some of the main issues at stake. There are eight potential impacts: the ability to link theory to practice; the ability to anticipate and prepare for teaching practice; the ability to analyze real-life teaching and learning situations; the ability to analyze educational events; the ability to develop useful competencies *in situ*; the ability to foster reflection through either self-observation or observing others; the ability to overcome distance; and the ability to use a diversity of learning models. This section addresses three impacts that are relevant to our research objective.

The ability to anticipate and prepare for teaching practice. The primary potential impact of videos on teacher training is that they allow pre-service teachers to anticipate actual classroom situations so they can better prepare for them. Thus, according to Sherin, "Video allows one to enter the world of the classroom without having to be in the position of teaching in-the-moment" (2004, p. 13). Similarly, incorporating videotapes into training programs gives teachers an opportunity to appreciate the realities of classroom teaching and learning. To develop this potential, authentic situations should be used, as opposed to clips of "good practices" as models of recommended practices for teachers in initial or ongoing training programs (see Oonk, Goffree, & Verloop, 2004, p. 137). The new self-directed training module was therefore based on authentic situations.

The ability to analyze the teaching–learning situation. For some authors, videotaping replaces and even improves on direct observation. Sherin (2004) identified two advantages of videos over direct observation: videos provide a permanent record that can be reviewed at any time (2004, p. 11–12); and they can be collected and edited (2004, p. 12–13) using, for example, hypermedia programs. Elaborating on these advantages, Sherin notes that video recordings enable teachers to develop new competencies as they pursue their training programs (2004, p. 13). For instance, they can analyze teaching sessions and relate theoretical notions to practical situations. Due to their new and easy digitizability, videos can be used to capture specific, concrete pedagogical points (Le Fevre, 2004, pp. 139, 236). Videos do this through two capabilities: (1) they can convey the complexity of the teaching–learning situation (Le Fevre, 2004, p. 239; Seago, 2004, p. 274); and (2) data and meaning can be extracted from a complex corpus of events so that the viewer can focus on particular educational events (Seago, 2004, p. 274). According to

Abell and Cennamo (2004), videos can also be used to compare practices longitudinally (over time in the same class). They can also be used laterally (between classes). Similarly, videos can be used comparatively to identify different teaching strategies (2004, p. 114). Moreover, when experts and novices are placed in contact through communication technologies, including videos, teaching strategies are no longer compared, but shared. Finally, some see videos as a way for future teachers to explore the teaching process (Harvard, 1990) and its various approaches (Fisherman, 2004, p. 202). This applies equally to experienced teachers, for whom videos serve as a vehicle to discover new approaches (2004, p. 202). For Seago (2004), the video is more than a practical extension of theoretical training; it responds to the need for a primarily practice-based training.

The ability to stimulate reflection. Video recordings foster reflection on teaching practices in two forms: (1) self-observation, where teachers-in-training view playbacks of their teaching lessons (usually simulated); and (2) observing others, where teachers-in-training view videos of other teachers. Whether observing oneself or others, teachers-in-training are prompted to engage in a first-level reflection as they review the teaching performance. Abell and Cennamo argue that a video recording can become "a perturbation for some students, catalyzing them to question their ideas, beliefs, and values" (2004, p. 117). Le Fevre explains that videos help future teachers discover their own beliefs about teaching (2004, p. 248). This reflection process is comparable for in-service teachers. By observing themselves and others, teachers can step back from their actions and contemplate them from a different standpoint (Le Fevre, 2004, pp. 237–238), which is the beginning of an awareness of their teaching practice. Most authors acknowledge the key role of videos in encouraging future teachers to reflect. However, self-observation is not the only way to motivate teachers to reflect on their practices. In fact, observing others exposes teachers to expert practices, which can further stimulate reflection through the variety and quality of the recordings presented. For this reason, we have opted for this form of reflection in our new program.

The Importance of Self-Efficacy Beliefs for Pre-service Teachers

Self-efficacy, or the belief that one is capable of performing in a certain manner to attain certain goals (Bandura, 1989), influences an individual's choices, efforts, and persistence when confronted with obstacles or failures. In other words, if self-efficacy beliefs toward teaching strategies, teaching methods, and teaching innovations could be nurtured in pre-service teachers, they would be more inclined to put these teaching strategies, methods, and innovations into practice. Moreover, they would be more successful at using these than pre-service teachers with lower self-efficacy beliefs. For Bandura (1997), self-efficacy is both context-bound and action-specific. It also comprises two components: efficacy expectations and outcome expectations. Efficacy expectations refer to the belief in one's capacity to achieve a given action in a specific context. Many researchers refer to this concept as perceived competence. Outcome expectations refer to the belief that the action performed will result in a particular, desired outcome. Many (e.g., Pajares & Schunk, 2001) refer to this second concept as perceived value.

Objective

In the aim of deepening our understanding of the potential of online videos to support the professional development of pre-service teachers, this study investigates the impact of online teaching videos on the development of self-efficacy beliefs of pre-service teachers.

Method

Participants
In this study on the impact of online teaching videos on the development of self-efficacy beliefs in pre-service teachers 196 student teachers participated. Subjects lived in Ontario, the largest province of Canada.

Measures
The questionnaire's self-efficacy scale was based on Bandura's self-efficacy theory (1977, 1989). In this study, we used two adapted version of Friedman and Kass' scale (2002). Data obtained in previous investigations reveal strong Cronbach's alphas for this scale. Data obtained in this study also reveal strong Cronbach's alphas for the three adapted versions of the scale, ranging from .91 to .95.

Aside from the exclusion of three statements (from a total of 19) that did not relate to our teaching situations, the scale was used unchanged. However, we adapted it slightly to the specific situations depicted in the two online videos (classroom management and the return to school), without changing the essential nature of the scale. For example, the original statement, "I believe that I know how to relate my teaching to my students' interests and tastes," was replaced by, "I believe that I can relate my teaching to my students' interests and tastes when I am teaching."

Data Collection
Participants viewed successive online videos on themes of classroom management and the return to school. Videos were extracted from the Web site Cyberprofs.org. Participants were asked to:

1. Fill out an initial questionnaire (pretest) to assess their self-efficacy beliefs related to two specific teaching contexts (classroom management and the return to school).

2. View a brief video about a specific teaching situation (classroom management).

3. Fill out a second questionnaire (post-test) to re-assess their self-efficacy beliefs related to the teaching situation presented in the first video.

4. View a second brief video on another specific teaching situation (the return to school).

5. Fill out a third questionnaire (post-test) to re-assess their self-efficacy beliefs related to the second teaching situation.

6. The questionnaires on each video ended with two open-ended questions on the impact of that video on their self-efficacy beliefs.

7. Some of the questionnaire respondents were asked to participate in a brief telephone interview.

Figure 1 below illustrates the data collection method.

Figure 1: Data collection method

2. Visionner la première vidéo (connexions lentes)

3. Répondre au deuxième questionnaire

4. Visionner la deuxième vidéo

5. Répondre au troisième questionnaire

*Javascript est requis pour la visualisation des clips vidéo. Comment activer Javascript dans mon navigateur?

Il ne vous faudra pas plus de 40 minutes pour faire cela.

Results

Results helped us to better understand the impact of online videos current and pre-service teachers' self-efficacy beliefs, with regard to two specific teaching skills or contexts (classroom management and return to school).

The paired sample *t-test* was conducted on the pretest and posttest results for both scales (classroom management and return to school) to verify the growth of self-efficacy beliefs. With missing values excluded, 135 subjects were selected for the paired sample t-test of the first scale (classroom management) and 96 subjects were selected for the paired sample t-test of the second scale (return to school). The result is highlighted in Figures 1 and 2.

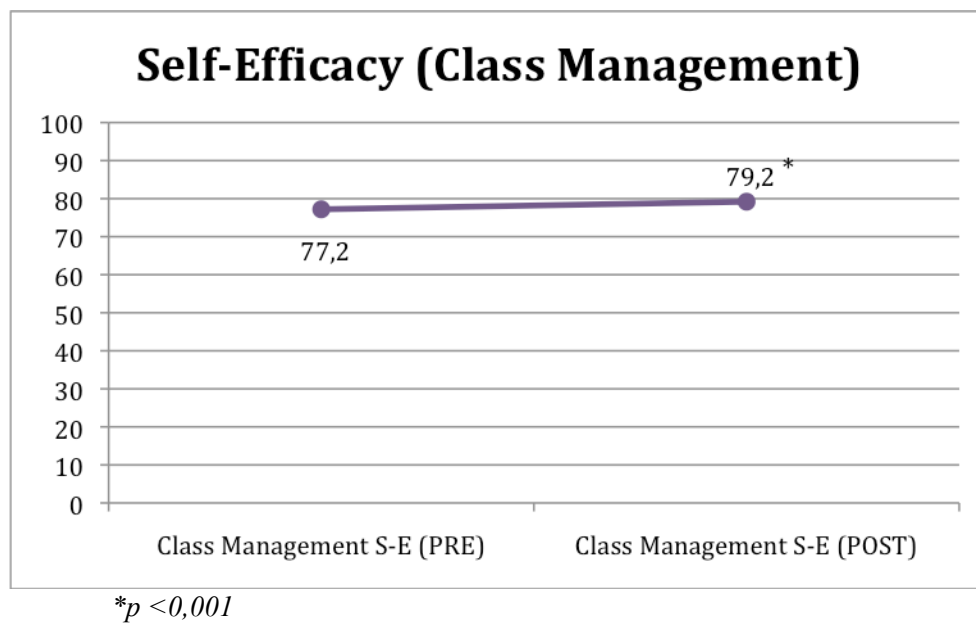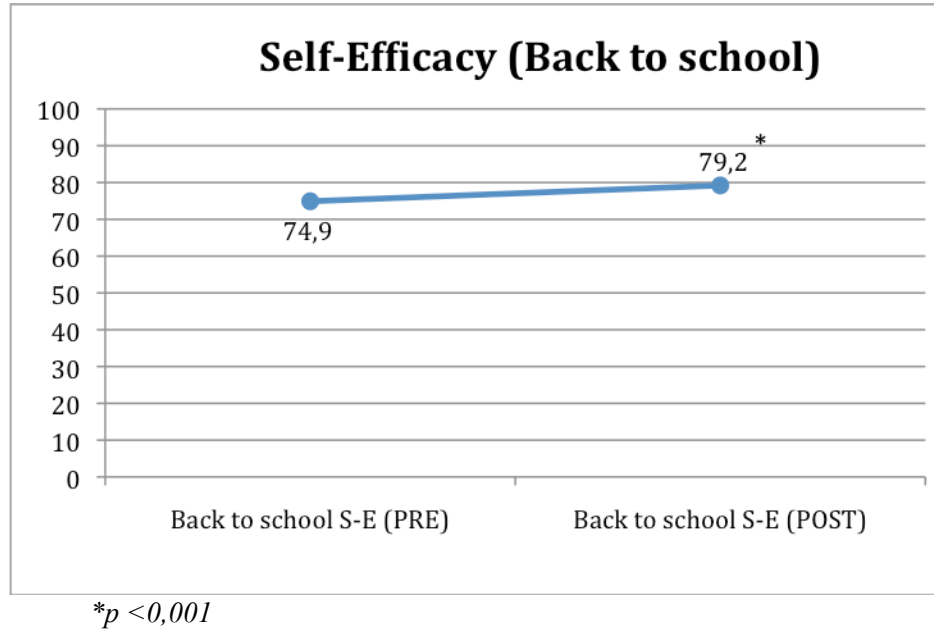Figure 2: Paired sample t-test result for classroom management

*p <0,001

Figure 3 : Paired sample t-test result for "return to school"

Self-Efficacy (Back to school)

p <0,001

Conclusion

Overall, the data shed some light on the impact of online teaching videos on the development of self-efficacy beliefs of pre-service teachers. One finding of this development research project is that educational technologies, and particularly online videos, significantly complement the training of teachers who are studying at a distance from the university. Moreover, the interviews conducted with the candidates clearly underscore that freely and continuously accessible online video clips presenting real-life classroom interactions and pedagogical activities significantly increase teachers' self-efficacy beliefs. Furthermore, many other advantages are associated with the use of authentic videos accompanied by comments from experts, teachers, and pupils.

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