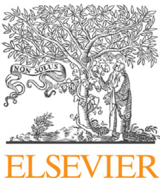
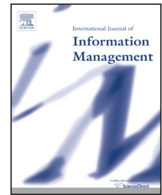


Contents lists available at ScienceDirect

International Journal of Information Management

journal homepage: www.elsevier.com/locate/ijinfomgt



Case study

A learning organization in the service of knowledge management among nurses: A case study

Marie-Pierre Gagnon [a,b,*], Julie Payne-Gagnon [b], Jean-Paul Fortin [c], Guy Paré [d], José Côté [e,f], François Courcy [g]

[a] Faculty of Nursing Science, Université Laval, 1050 avenue de la Médecine, Quebec City, Canada
[b] CHU de Québec Research Center, 10 rue de l'Espinay, Quebec City G1L 3L5, Canada
[c] CSSS de la Vieille-Capitale, 880 Père-Marquette, Quebec City G1S 2A4, Canada
[d] Department of Information Technology Management, HEC Montréal, 3000 chemin de la Côte-Sainte-Catherine, Montreal H3T 2A7, Canada
[e] Faculty of Nursing Science, Université de Montréal, 2375 chemin de la Côte-Ste-Catherine, Montreal H3T 1A8, Canada
[f] CHUM Research Center, 850 rue St-Denis, Montreal H2X 0A9, Canada
[g] Department of Psychology, Université de Sherbrooke, 2500 boulevard de l'Université, Sherbrooke J1K 2R1, Canada

ARTICLE INFO

Article history:
Received 29 April 2015
Accepted 9 May 2015
Available online 23 May 2015

Keywords:
Learning organization
Knowledge management
Nursing
Continuous learning

ABSTRACT

It becomes critical for health care organizations to develop strategies that aim to design new work practices and to manage knowledge. The introduction of learning organizations is seen as a promising choice for better knowledge management and continuing professional development in health care. This study analyzes the effects of a learning organization on nurses' continuing professional development, knowledge management, and retention in a health and social services centre in Quebec, Canada. The learning organization seemed to affect daily nursing work in a positive manner, despite its variable impact on other professionals and other sites outside the hospital centre. These changes were particularly pronounced with respect to knowledge transfer, support for nursing practices, and quality of health care, objectives that the learning organization had sought to meet since its inception. However, it seemed to have a limited effect on nurse retention.

© 2015 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

1. Introduction

Today's society emerged as a result of a transformation from an industrial era to a knowledge era, leaving room for the creation, collection, and use of knowledge (Johannessen & Olsen, 2010). As highly knowledge intensive institutions requiring continuous education in order to improve their potential (Tsai, 2014), health care institutions have seen their knowledge capital increase in importance with the transformation of society (Estrada, 2009; Tsai, 2014). Health care professionals are also in need of knowledge since their practice requires lifelong learning in order to improve their competencies and provide effective and quality care for their patients (Tsai, 2014).

On the other hand, health care institutions are also facing important challenges in the area of knowledge management. Managing knowledge in health care organizations is complex since they are multi-level and multi-site networks with central management, but also strong local organizations (French et al., 2009). Also, the sheer amount and fragmentation of information, rapid expansion of knowledge, and context dependency make it impossible for a person to access all the available knowledge in this domain (Estrada, 2009; French et al., 2009). Additionally, the health care sector is experiencing a widespread nursing shortage in many developed and developing countries around the globe (Buchan & Aiken, 2008; Littlejohn, Campbell, & Collins-McNeil, 2012), and faces an ageing population (World Health Organization, 2010). An important loss of knowledge capital is attributed to the retirement of experienced and knowledgeable nurses across the institutions (Clauson, Wejr, Frost, McRae, & Straight, 2011). This situation is alarming due to the possible consequences that they may have on health care professionals practice as well as access, security, and quality of health care (Clauson et al., 2011; Estrada, 2009).

In this context, it is critical for health care organizations to look for innovative solutions, as well as to develop strategies that aim to design new work practices and to manage knowledge. Among the

* Corresponding author at: Faculty of Nursing Science, Université Laval, 1050 avenue de la Médecine, Quebec City, Canada. Tel.: +1 4185254444x53169; fax: +1 4185254194.

E-mail addresses: marie-pierre.gagnon@fsi.ulaval.ca (M.-P. Gagnon), julie.payne-gagnon@crchudequebec.ulaval.ca (J. Payne-Gagnon), jean-paul.fortin@fmed.ulaval.ca (J.-P. Fortin), guy.pare@hec.ca (G. Paré), jose.cote@umontreal.ca (J. Côté), francois.courcy@usherbrooke.ca (F. Courcy).

http://dx.doi.org/10.1016/j.ijinfomgt.2015.05.001
0268-4012/© 2015 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

possible solutions, learning organizations are seen as an interesting and promising choice for better knowledge management (Davies, Wong, & Laschinger, 2011; Zheng, Yang, & McLean, 2010).

1.1. Learning organization

The term 'learning organization' was popularized in Peter Senge's "The Fifth Discipline: The Art and Practice of the Learning Organization" (Senge, 1990). A learning organization is defined as an organization that exhibits adaptability, learns from mistakes, explores situations for development, and optimizes the contribution of its personnel (Wilkinson, Rushmer, & Davies, 2004). Senge outlined five personal disciplines that are key features of a learning organization: system thinking, personal mastery, mental models, shared vision, and team learning (Senge, 1990). These disciplines allow for the creation of infrastructure that promotes continuous learning, adaptation, and growth in organizations (Estrada, 2009). Consequently, one of the main goals of the learning organization is to construct an organizational culture of learning (Tsai, 2014).

The development of a learning culture in an organization involves the continuous education of its members. This process takes place by converting individual memory, which is the accumulated knowledge of an individual, into organizational memory, which takes the form of goals, handbooks, or standard procedures (Chen, Lee, Zhang, & Zhang, 2003). When successfully converted, it is critical to make organizational knowledge accessible to promote organizational learning (Chen et al., 2003). This knowledge needs to be transmissible, easily distributable, and comprehensive so that all members consider it valid and useful (Abel, 2008; Chen et al., 2003). Completely integrated knowledge represents a coherent, accessible, and maintained organizational memory, a vital aspect in a healthy organizational learning process (Abel, 2008).

It is believed that introducing a learning culture in health care organizations could improve the quality of professional practice, satisfaction, lifelong learning, and patient care, while also lowering costs (Bell, Robinson, & See, 2013). However, despite the impressive documentation on learning organizations, studies on this topic in health care settings remain scarce in the current literature (Bell et al., 2013).

In order to better understand the impacts of introducing a learning organization in these settings, this study aims to explore its effects on nurse professional, educational, and organizational factors related to continuing professional development, knowledge management, and retention in a Health and Social Services Center (French acronym: CSSS) of the province of Quebec, Canada. A CSSS is an integrated health care organization that usually comprises various types of facilities and health care services: local community services centers, residential and long-term care centers, and, where applicable, general and specialized hospital centers on a given territory (Quebec Ministry of Health, 2013). This CSSS represents the only case where a formal learning organization culture was introduced in the Quebec health care context.

2. Context of study

In 2003, a major medico-nursing crisis was caused by a failure to rescue event. Confronted with this situation, the Nursing Directorate put in place a clinical committee on continuous quality improvement composed exclusively of nurses. Their mandate was to understand and to identify the problems experienced by their colleagues. Members of the committee quickly realized that their CSSS was ill equipped for the promotion of the education and expertise of their nurses, which threatened the quality and security of care.

The chosen solution to these issues was the implementation of a new organizational culture, the learning organization, which had three main goals: better quality and security in health care, support for nurse practice, and knowledge transfer. The implementation, which began in 2005, was done in two initial phases. The first was the restructure of the continuous support to nurses in their practice through a mentoring program. The second phase, that aimed to accommodate, support, and retain employees, was realized through the development of learning strategies focused on the idea of knowledge that was there "just in time, just enough, and just for me".

A variety of strategies assisted by information and communication technology (ICT) were created to support the learning process in the organization. Among them, the most used was the video. The first projects involving knowledge transfer were the creation of four DVD videos about topics judged more problematic and that required in-depth study: newborn assessment, Plum A+ infusion system, CADD pump, and the maternity unit. Later, animated memos were added to the DVDs. As explained by the manager, an animated memo is a few minutes video filmed in action by a simple over-the-shoulder camera. These videos are generally used to illustrate health care practice (such as delirium management) and were introduced to replace old paper memos scattered on noticeboards of the facilities. Doing so made the animated memos more accessible to employees. Other important learning strategies and programs supported the value of continuous learning and collectivity promoted by the learning organization: checklists, guidelines, aide-memoires, procedure sheets, lunch conferences, as well as mentoring, integration, speciality, and orientation programs.

3. Methods

3.1. Study design and participants

To investigate the learning culture implemented in this particular CSSS, we conducted an exploratory case study. The study received the approval of the CHU de Québec ethical committee prior to the recruitment of participants. We used a purposive sampling approach, targeting key informants who had been involved in the learning organization, due to the exploratory nature of the study. Recruitment began from a list of ten individuals who had participated in the learning organization's projects whose names were provided by the Nursing Directorate of the targeted CSSS. All of the individuals on the list were contacted by phone. Before the interviews, participants had to give their informed and voluntary consent by reading thoroughly and signing a consent form.

3.2. Data collection and analysis

We conducted face-to-face semi-structured interviews based on a conceptual map that was developed in the first phase of the project (Gagnon et al., 2013). The interview guide included three sections: the effects of the learning strategies and activities developed by the learning organization on nursing practices, the factors that influenced the adoption of projects developed within the learning organization, and the influence of the learning organization on nurse retention. The interviews lasted approximately one hour and were audio recorded with the participants' consent.

Interviews were transcribed verbatim producing a total of 103 pages of transcripts. We then analyzed their content with the help of the qualitative data analysis computer software NVivo (QSR International). In order to do so, we adopted a deductive–inductive thematic analysis, using the conceptual map as the starting point for the codification, and completing it with emerging themes. Two people independently analyzed the interviews and then compared

their codification in order to reach consensus. Interview quotes presented in section 4 were translated into English from French.

4. Results

4.1. Participants' characteristics

From the ten people contacted by phone, eight agreed to participate in the study. Two declined to participate due to heavy workload. Two more individuals, who were met at the study site, agreed to participate, bringing the total number of participants to ten. Eight face-to-face interviews were completed (seven individual interviews and one with two participants), and one individual interview was done by videoconference (the participant was absent during our visit to the CSSS). All participants but one was a nurse; the other participant was an information technology technician who had an important role in the creation of various learning strategies assisted by ICT for the learning organization. All participants were female. This was accidental, but not surprising considering that the great majority of nurses in the province of Quebec are female (Marleau, 2013). Most nurses had more than 20 years of experience, but their tenure in their current position was more varied, ranging between 1.5 and 20 years. Finally, half of the participants were fairly new to the learning organization, working in this CSSS for less than three years. See Table 1 for more details.

4.2. Changes in nursing practice

The learning organization brought important changes to nursing practice. Specifically, it brought a new culture to the nurses based on continuous learning at work. According to six participants, the mentoring program for nurses of zero to five years of experience was a good incentive to new nurses to begin and continue working in this CSSS and a great way to promote continuous learning. Firstly, the program integrated new nurses to their environment through training on the basic procedures in place in the CSSS given by a nurse-educator. Secondly, novice nurses were paired with experience colleagues in their specific field of practice in order to support knowledge transfer and their work. Thirdly, the nurse-educator also conducted routine assessments of the novice nurse practice to ensure the progression of her integration and knowledge acquisition.

Table 1
Participants' characteristics.

Participants' characteristics	All participants ($n = 10$)[a]
Role	
Nurse	3
Nurse-educator	2
Assistant chief-nurse	1
Chief-nurse	2
Manager	1
Technician	1
Gender	
Female	10
Years of experience (nursing)	
10–14 years	1
15–19 years	1
20–24 years	2
25–29 years	4
Years in current position	
Less than 5 years	2
5–9 years	2
10–15 years	3
16–20 years	1
Years working with a learning organization	
3 years and less	4
4–6 years	3
More than 6 years	1

[a] Two participants did not answer the three questions related to years of experience, reducing the total number of participants for these questions to eight.

New nurses as well as older nurses also benefited from the learning strategies created through the learning organization, particularly in the case of videos. The video format used for many projects of the learning organization was considered worthwhile by four participants since it allowed nurses to show the experiential knowledge in their daily practice and to describe it visually and audibly, something that could hardly be done before these video projects were carried out. The four DVD videos were distributed in the form of binder so that every installation and unit could have access to these videos. Also, some novice nurses received DVD copies if it was related to their speciality.

Six participants claimed that these strategies made it possible to learn anytime and anywhere since the videos were accessible to them at any time of the day or night on a variety of topics. Seven participants thought that the information acquisition was fast and believed that having the information quickly accessible decreased the time spent for searching it. Additionally, five participants noted that the information was customizable and eight participants pointed out that these videos represented a great information reminder for nurses. See Table 2 for a summary of the changes brought to nursing practice by the videos prepared within the learning organization.

Participants also mentioned other changes that took place in relation to their new work environment. All nurses noticed that the practice of care improved with the introduction of the learning organization. Specifically, participants observed improvements in the level of nurse autonomy; three participants noticed time savings and two participants noticed a decline in the level of stress at work. Four participants believed that the learning organization supported the standardization of practices, and four noticed that nurses reflected more on their practice. In terms of work satisfaction, five participants noticed an improvement in general satisfaction at work. Two participants also mentioned that a collective pride among nurses seemed to take hold. Eight participants noted that there was a feeling of recognition often associated with the learning organization's projects. For example, some nurses noted that more colleagues referred to them after their participation in certain video projects. It is also interesting to note that all of the learning organization's projects were created by a group of chosen experts on the topic, strengthening collaboration and communication between nurses, and even with other professionals participating in these projects.

Five participants believed that the exposure to the learning organization's programs and projects would help the process of appropriation of information by their colleagues and, ultimately, develop an intellectual curiosity that could bring them to "learn to learn" by themselves. For four of them, this curiosity could even encourage some to engage more actively to the learning organization culture through proposing new projects or themes and even participating directly in the creation of learning strategies. Table 3 summarizes the positive effects of the learning organization on nurses' work environment.

In this CSSS, the distance between the facilities is important, and the use of ICTs was judged critical to achieve the goals of the learning organization across the points of services. According to three participants, the committee chose ICTs that were already available, but that could complete similar tasks at a more reasonable price than more expensive alternatives. The manager gave one particular example of this re-appropriation with respect to the videoconference. Instead of installing expensive videoconference systems, the organization opted to use equipment that could allow practical communication among nurses from different points

Table 2
Summary and selected quotes related to the changes brought by the videos to nursing practice.

Changes	*n*	Selected quotes
Information reminder	8	After a while, we forget our notions and when we come back with a video that reminds us of the outlines, we can get back to the basics more easily . . . We are more aware that we have forgotten information and need to read up on it again. [. . .] Or we remember teaching that was done in the morning. The nurse can say that we will look at the video again, together. That's its purpose. (Nurse)
Fast information acquisition	7	Suppose that you don't know a procedure or a technique. Before, I would take my big notebook of techniques, I would browse through it until I got to. . . Oh, there it is! I would need to read the technique, memorize it, see it with someone or have someone show me. It's the same thing now. There are cases when nurses do not remember certain procedures or techniques. They need to seek that information somewhere. What the learning organization does is to make the information available right then and there. (Nurse-educator)
Accessible knowledge	6	There are often relatively few nurses on the floor, one or two per shift. If on a Saturday evening at 10:00 PM a young nurse needs an application of the displacement pump, and she doesn't know how to do it, well, it's for these reasons that we created the learning videos. (Nurse-educator)
Customizable information	5	There are some people who still like paper. But if you want, I can give you another format. You can listen to it on the iPad, you can watch it at home, and you can see it directly on the computer if you know how it works. [. . .] It's a new way to present things. It's interesting for them. (Nurse-educator)
Demonstration of experiential knowledge	4	The nurse will do something automatically sometimes. After that, you ask her to describe the technique that she used. . . She will write it out, but the little thing she did to save time is not written. That's experiential knowledge. We were not transmitting such knowledge. We were wondering how it was done. We would start videos and nurses noticed: "Hey I do that; I didn't think that I was doing that. . ." We began writing things down and describing them, and we noticed that there were a lot of unspoken actions. (Chief-nurse)

of services while being economical and mobile. The chosen equipment for these tasks was the iPad and iPhone. These devices did not produce the same video quality as dedicated videoconference systems, but they still fulfilled the functions entrusted to them. iPads and iPhones were also used for remote support of novice nurses. The novice nurse had the possibility to call the nurse-educator for a direct consultation when encountering an issue with a patient.

Additionally, these devices allowed access to the videos created by the learning organization, since all of them were integrated into the system by the technical team before giving them to the nurses. For six participants, this access was particularly interesting when it came to the transportability of information, especially in home care. For three participants, these devices were seen as easy to handle

Table 3
Summary and selected quotes related to the positive effects of the learning organization on nurses' work environment.

Effects	*n*	Selected quotes
Improved care	10	[The learning organization] has a ripple effect, we optimize our knowledge, we train the young nurses, we transfer our knowledge and we reinforce our team. [. . .] All these projects share the concern to optimize our care and to offer a better service to our clientele. (Nurse)
Feeling of recognition	8	Since I was part of one of these projects, I helped a nurse who had to work with [the equipment the project was on]. I was also the expert that assisted a nurse for a new project [for another equipment]. New nurses, and even the older ones. . . those who are doing their bachelors, they refer to us a lot more since the project. It was enjoyable. I liked it. (Nurse)
Appropriation of information	5	It is to recognize expert nurses in their fields, the leaders. They're the key persons to seek out. They're the one that have credibility and those we want to see in the videos. People will identify to them. The novice that sees [the expert] in the video says: "She is in the TV, she must be quite the expert!" You recognize the person and her personality. It makes the videos enjoyable to watch. You cannot do otherwise than to understand why you need to change your practice. It has an impact. And you want to follow them in these projects. (Nurse)
Increase in work satisfaction	5	Nurses are more satisfied since they have now their say in the projects, can suggest ideas and management is more attentive to what they say. (Technician)
Engagement in the organization	4	I believe that it's a significant project, it's a team project. It created a synergy and pride. Because when the product is out, and we receive praises, it falls down on all the team. And it stimulates others to do projects, too. (Nurse)
Reflection on practice	4	I find that nurses will be more alert, they will raise questions on the procedures. "Is it the last version? It is really like that? Is it well like that?" I am more solicited at this level as an educator. (Nurse-educator)
Standardization of practices	4	What the learning organization allows me to do is to ensure a basis. For example, if I take work or work results that the learning organization has done for the maternity unit, it allows me to give a concrete training to young nurses or beginner nurses who will be novices in the maternity specialty. To give them the same functioning basis. (Chief-nurse)
Gains in time	3	We won't send them [outside the region] for training on leadership. We won't bring somebody over from outside the region for one or two full days like before. We will take someone from here, that we know she has strengths, and we will organize something short, such as a little clinic. We will film it. We will make a video, and make a tool with it. We will make something so that the nurse will be able to plan and make her daily team meetings more efficient. (Nurse-educator)
Collective pride	2	The learning organization was a process. People like it. They like the organization. It is a source of pride, collective pride. We diminished our medication errors. [. . .] Employees are committed to improve, committed to learn to learn, committed themselves. You don't need management. It created more autonomy, more pride. We want that people be able to solve problems by themselves, all the time. (Manager)
Diminution of stress	2	It is especially the retention, the increased confidence for novices, to bring them to be expert rather quickly. That's what we ask from them. It's really, really stressing for them. I think that an environment where they feel good, where they feel supported by older nurses and where they can enjoy multiple tools to update or improve their competencies is important. (Nurse)

and not requiring technical support, even though four participants believed that this support was available to the nurses.

According to all participants, the use of ICTs was gaining popularity among nurses. Indeed, they noticed that the nurses increasingly used ICTs as much for communicating than acquiring information in the workplace. One nurse even hoped for the complete computerization of the strategies used by the learning organization. Summary of the changes brought to nurses by the ICTs implemented within the context of the learning organization can be seen in Table 4.

As explained in Section 2, the learning organization's committee pursued three main objectives in the CSSS: better quality and security in health care, support for nurse practice, and knowledge transfer. The comments that were collected suggest that these goals were met. Indeed, all participants emphasized that the learning organization brought about an important improvement in these three fields.

4.3. Variable impact

Despite the positive effects of the implementation of a learning organization on nursing practice, its impact was uneven across the CSSS. According to five participants, the involvement of other health professionals (apart from nurses) was very low. Being a nurses' initiative, the creation of a learning culture was presented to the other professionals later in the change process and they were not always involved in learning strategies projects, which made it more difficult for these workers to take ownership of the project. Moreover, introducing the learning organization required an important process of culture change. This was not carried out symmetrically among the facilities of the CSSS. For instance, nurses from one local health center reported that they would not take part in conferences at the hospital center that is a 45-min drive away. A nurse at another facility reported that people were not conscious of being part of a learning organization; it was just another project for them.

This situation was caused in part by the role that the hospital center played in the learning organization. According to the comments gathered during four interviews, the majority of the learning organization's projects were conceived, created, and carried out at the hospital center. This situation provided little room for the learning organization to be integrated into the other facilities, which hampered its incorporation in their environment. At the hospital center, the learning organization was omnipresent on all floors, especially in the form of posters presenting past and ongoing projects. This presence was less noticeable in the other two facilities visited.

It should further be noted that accessibility problems caused by the fact that the organization could not equip all its facilities with new equipment and decent network access, due to a limited budget, were also an important factor explaining the dissymmetry between the hospital center and some of the other facilities. According to six participants, these deficiencies resulted in major accessibility issues when it came to using the learning strategies assisted by ICT in facilities that were not up-to-date on the technological level. Also, two participants noted that there was some resistance over the use of ICTs for communicating and for learning among certain nurses, particularly the older ones. See Table 5 for a summary of the barriers to the adoption of the learning organization in the CSSS.

Lastly, participants perceived that the effect of the learning organization on nurse retention was limited. Even if seven participants highlighted that the implementation of this culture could help the retention of nurses in the CSSS, most believed that other factors were more important. Origins (ten mentions), work environment (eight mentions), and family situation (six mentions) were identified as the most important incentives in the choice of nurses to work in the CSSS. Nevertheless, all the participants believed that the learning organization was important to support nursing practice and knowledge transfer.

5. Discussion

Our study identified many impacts that a learning organization has when it comes to supporting nurses. It also outlined the learning organization's adoption factors in a CSSS in the province of Quebec, Canada. Few studies have analyzed the effects of a learning organization in health care settings (Bell et al., 2013). This research sought to help fill this gap by contributing to the understanding of the effects of introducing a learning organization in a Canadian health care institution. This project also aimed to explain how the learning culture influenced nursing practices, the service organization, and knowledge management, as well as how the evolution of the organizational culture resulted from the introduction of the learning organization.

Overall, the interviewed participants seemed to believe that the learning organization addressed the lingering issues of deprofessionalization of the nursing profession and challenges related to the transfer of knowledge in this CSSS located in a remote region. One of the learning organization's preferred learning strategies assisted by ICT for knowledge transfer is video, in the form of DVDs or animated memos. These homemade videos allowed easier transmission, not only of the explicit knowledge associated with nursing practice, but also of the experiential knowledge embedded in nursing practice that would otherwise be hard to formalize. The

Table 4
Summary and selected quotes related to the changes brought by the ICTs to nursing practice.

Changes	*n*	Selected quotes
Transportability of the information	6	There are no more nurses who go for nothing to patients' homes, I don't have patients who are not treated, there are no more refusals. With [an iPhone or iPad], a nurse can go to a home, see the video section she needs and program a pump. (Manager)
Available support for ICTs	4	I am not really into computers! So, we're really lucky to have since two, three years, an intern specialist that programmed for us and show us how to work with these technologies. We also have many IT technicians. When we have an issue, or we do not know how to use it, they give us little training or information that allow us to work with them. We are very well supported at the technical level. (Nurse-educator)
Ease of handling	3	I learned [to use iPads] on the fly. I had also the technician who was there. She was very skillful, patient and kind. There were also trials and errors. I brought it at home and I played with it, then I worked with it. At first, I was embarrassed to bring it at home. It is a work instrument; I won't have fun with it at home, go on the Internet and things like that! The technician told me that it was made for that, and after playing with it, I would master it and do a lot of things with it. . . She was right.
Technologies at reasonable costs	3	A problem we had, and a key to our success, was that we were small and we didn't have the means. IT did not want to help us, so we went with resources from the community. These resources were: cameras, television, DVDs, iPads, iPhones. We went with the things on the market. We didn't go with e-learning companies since it was so huge, heavy and practically counter-productive compared to our upcoming needs. (Manager)

Table 5
Summary and selected quotes related to the unfavorable factors to the adoption of the learning organization.

Factors	*n*	Selected quotes
Inappropriate network access	6	At the hospital center, we are lucky; we have a broadband that is pretty strong. The problem is when you look into residential and long-term care centers or some local community services centers, where there are only one or two places in the facility where nurses can go and watch videos. The level of accessibility of the information is not equal everywhere. (Nurse-educator)
Low involvement of other professionals	5	There're not a lot of multidisciplinary teams [for the projects]. It really needs to be an issue that touches everyone. [. . .] There's maybe an influence [of the learning organization on other professionals], but I don't see it. They don't see which videos we do. They hear about it, but they don't see any of it. (Nurse-educator)
Centralization around the hospital	4	There are a lot of people [outside the hospital center] who are not aware or don't know the amplitude of [the learning organization]. They know it is something interesting, they hear about it, they know the outlines, but they're not that involved in it. (Chief-nurse)
Resistance of nurses	2	Some nurses on the work floor, such as the older nurses, are stuck in a routine and say "[the learning organization] is not for me. I don't have time for these things. I will go take my break and don't bother me with it". [. . .] Saying that they don't have the time is a lack of interest in disguise. It's the classic and fatal excuse: I don't have the time. I don't believe so. If you want to be up to date, you always have the time for something. (Nurse-educator)

latter statement is consistent with solutions proposed by Nonaka, Toyama, & Konno (2000) and followed by the learning organization committee, which consist of using observation and imitation to overcome the communication barrier surrounding this particular type of knowledge. By using videos to transfer knowledge, nurses created collective knowledge that preserved both explicit and tacit knowledge of their profession.

Moreover, peers and mentors transmitted to both young and more experienced nurses the ideas behind the learning organization and the value of "learning how to learn". This type of transfer, adopted by the learning organization committee, follows the ideas of Marchand and Lauzon (2007) who assert that, ultimately, nurses should learn to learn and internalize the tools available in the organization to improve their practice. This is also consistent with other authors who state that continuous learning in action, as seen with the learning organization, is more likely to influence behavior than other more traditional, passive and non-interactive learning methods (Borbolla et al., 2013; Van Hoof & Meehan, 2011). Moreover, the literature supports the idea that continuing learning environments not only enhance the quality of work for health professionals, but also improve outcomes for clients (Pool, Poell, & ten Cate, 2013), which is in line with the objectives of the studied organization.

Other changes were brought about by the learning organization as regards nursing practice, such as improved communication among nurses, as well as their collaboration, thanks to the development of projects and the availability of ICT. Participation in learning organization initiatives also resulted in feelings of recognition, pride, and autonomy, as well as time savings, reductions in stress at work, standardization of practices, continuous support to nurses, and reflection. Moreover, the learning strategies assisted by the ICTs used within the context of the learning organization allowed rapid access to flexible information. These effects were also identified in the literature on ICT use in nursing education (Button, Harrington, & Belan, 2014).

Nevertheless, there are still elements that could be improved by the learning organization. At the time of this study, the implementation of the learning organization was still incomplete among nurses, and even more so among other health professionals. The lack of other professionals in the learning organization is an interesting point to underscore, since we could easily imagine that a participatory process that promotes collaboration like the process promoted by the learning organization (Harrison-Broninski and Korhonen, 2012; Song, Jeung, & Cho, 2011) would facilitate multidisciplinarity. However, some of these professionals have already participated in the projects, and the learning organization committee expected that this participation would grow over time.

Finally, the learning organization had a limited effect on retention of nurses in this CSSS. While the value of the learning organization is generally acknowledged, factors such as origins, work environment, and family situation seemed more important as incentives to work in the CSSS.

5.1. Limitations

Even though this exploratory case study is not by its very nature generalizable, it could serve as a basis for comparison when studying other cases as well as provide evidence that could be used by others to judge the applicability of a learning organization approach for their situation. For example, this study could be included in a larger research on the influence of learning organizations on health care professionals' practice. Moreover, we wanted to improve and deepen understanding of the effects of the learning organization using the rich and meaningful experiences and descriptions of participants, which would have been impossible with other research designs (Collingridge & Gantt, 2008). Nonetheless, this study meets the requirements of valid qualitative research, according to various quality criteria including triangulation, respondent validation, exposition of methods, reflexivity, attention to negative cases, fair dealing, rich description, and relevance (Mays & Pope, 2000).

6. Conclusion

The organizational culture change process—through a learning organization promoting knowledge transfer in the work environment and collective learning—instituted in a CSSS of Quebec brought about important and much needed changes in nursing practices and work environment. Research on new and innovative solutions to improve knowledge management and support continuing professional development of health care professionals is still limited. This case study can help clarify the impacts of a learning organization on health care professionals' practices. According to the participants in this case study, the learning organization seemed to affect daily nursing work in a positive manner, despite its variable impact on other professionals and other sites outside the hospital center. These changes were particularly pronounced with respect to knowledge transfer, support for nursing practices, and quality of health care objectives, which the learning organization had sought to meet since its inception. As a final remark, it would be interesting to study in the future the longer-term effects of the integration of a learning organization on nurses' professional development, as well as on those of other health care professionals who are part of this new culture.

Conflict of interest

The authors are not aware of any conflict of interests.

Acknowledgments

Funding for this research project was provided by Canadian Institutes of Health Research (CIHR) (No 200911PHE-217005-PHE-CFBA-11114). The funding source had no involvement in the study design; in the collection, analysis and interpretation of data; in the writing of the report; and in the decision to submit the article for publication. The authors thank Erik Breton who helped with the data collection and analysis and the review of this paper. They would also like to give a special thanks to the participants of this case study.

References

Abel, M. H. (2008). Competencies management and learning organizational memory. *Journal of Knowledge Management*, *12*(6), 15–30.
Bell, E., Robinson, A., & See, C. (2013). Do written mandatory accreditation standards for residential care positively model learning organizations? Textual and critical discourse analysis. *International Journal of Nursing Studies*, *50*(11), 1446–1458.
Borbolla, D., Gorman, P., Del Fiol, G., Mohan, V., Hersh, W., Otero, C., Luna, D., & Gonzalez Bernaldo De Quiros, F. (2013). Physicians perceptions of an educational support system integrated into an electronic health record. *Studies in Health Technology & Informatics*, *186*, 125–129.
Buchan, J., & Aiken, L. (2008). Solving nursing shortages: a common priority. *Journal of Clinical Nursing*, *17*(24), 3262–3268.
Button, D., Harrington, A., & Belan, I. (2014). E-learning & information communication technology (ICT) in nursing education: A review of the literature. *Nurse Education Today*, *34*(10), 1311–1323.
Chen, J. Q., Lee, T. E., Zhang, R., & Zhang, Y. J. (2003). Systems requirements for organizational learning. *Communications of the ACM*, *46*(12), 73–78.
Clauson, M., Wejr, P., Frost, L., McRae, C., & Straight, H. (2011). Legacy mentors: Translating the wisdom of our senior nurses. *Nurse Education in Practice*, *11*(2), 153–158.
Collingridge, D. S., & Gantt, E. E. (2008). The quality of qualitative research. *American Journal of Medical Quality*, *23*(5), 389–395.
Davies, A., Wong, C. A., & Laschinger, H. (2011). Nurses' participation in personal knowledge transfer: the role of leader–member exchange (LMX) and structural empowerment. *Journal of Nursing Management*, *19*(5), 632–643.
Estrada, N. (2009). Exploring perceptions of a learning organization by RNs and relationship to EBP beliefs and implementation in the acute care setting. *Worldviews on Evidence-Based Nursing*, *6*(4), 200–209.
French, B., Thomas, L. H., Baker, P., Burton, C. R., Pennington, L., & Roddam, H. (2009). What can management theories offer evidence-based practice? A comparative analysis of measurement tools for organisational context. *Implementation Science*, *4*, 28.
Gagnon, M. P., Breton, E., Paré, G., Courcy, F., Côté, J., Trépanier, A., & Fortin, J. P. (2013). Les TIC et le maintien en poste des infirmières dans trois régions du Québec [ICTs and nurse retention in three regions of the province of Quebec]. *Santé Publique*, *2013*(3), 305–313.
Harrison-Broninski, K., & Korhonen, J. (2012). Collaboration infrastructure for the learning organization. In W. Abramowicz, D. Kriksciuniene, & V. Sakalauskas (Eds.), *Business information systems* (pp. 120–131). Berlin Heidelberg: Springer.
Johannessen, J. A., & Olsen, B. (2010). The future of value creation and innovations: Aspects of a theory of value creation and innovation in a global knowledge economy. *International Journal of Information Management*, *30*(6), 502–511.
Littlejohn, L., Campbell, J., & Collins-McNeil, J. (2012). Comparative analysis of nursing shortage. *International Journal of Nursing*, *1*(1), 22–27.
Marchand, L., Lauzon, N., 2007. Formation avec TIC en milieu de travail [Training with ICTs in the workplace]. Montréal, QC: Réseau d'enseignement francophone à distance du Canada. <http://archives.refad.ca/recherche/formation_tic/pdf/formation_tic.pdf/>.
Marleau, D., 2013. Rapport statistique sur l'effectif infirmier 2012–2013: Le Québec et ses régions [2012–2013 Statistics report on nursing workforce: Quebec and its regions]. Westmount, QC: Ordre des infirmières et infimiers du Québec. <https://www.oiiq.org/sites/default/files/Rapport_statistique_2012-2013.pdf/>.
Mays, N., & Pope, C. (2000). Qualitative research in health care. Assessing quality in qualitative research. *British Medical Journal*, *320*(7226), 50–52.
Nonaka, I., Toyama, R., & Konno, N. (2000). SECI, Ba and leadership: a unified model of dynamic knowledge creation. *Long Range Planning*, *33*(1), 5–34.
Pool, I., Poell, R., & ten Cate, O. (2013). Nurses' and managers' perceptions of continuing professional development for older and younger nurses: A focus group study. *International Journal of Nursing Studies*, *50*(1), 34–43.
Quebec Ministry of Health, 2013. Health and Social Services System in Brief. <http://www.msss.gouv.qc.ca/en/sujets/organisation/en-bref/gouvernance-et-organisation/reseaux-locaux-de-services/>.
Senge, P. M. (1990). *The fifth discipline: The art and practice or the learning organization*. New York, NY: Doubleday.
Song, J. H., Jeung, C. W., & Cho, S. H. (2011). The impact of the learning organization environment on the organizational learning process in the Korean business context. *The Learning Organization*, *18*(6), 468–485.
Tsai, Y. (2014). Learning organizations, internal marketing, and organizational commitment in hospitals. *BMC Health Services Research*, *14*, 152.
Van Hoof, T. J., & Meehan, T. P. (2011). Integrating essential components of quality improvement into a new paradigm for continuing education. *Journal of Continuing Education in the Health Professions*, *31*(3), 207–214.
Wilkinson, J. E., Rushmer, R. K., & Davies, H. T. O. (2004). Clinical governance and the learning organization. *Journal of Nursing Management*, *12*(2), 105–113.
World Health Organization. (2010). *The world health report: Health systems financing: The path to universal coverage*. Geneva: WHO Press. http://www.who.int/whr/2010/en/
Zheng, W., Yang, B., & McLean, G. N. (2010). Linking organizational culture, structure, strategy, and organizational effectiveness: Mediating role of knowledge management. *Journal of Business Research*, *63*(7), 763–771.

Marie-Pierre Gagnon is Associate Professor at the Faculty of Nursing of Université Laval and researcher at the CHU de Québec Research Center. She also holds the Canadian Research Chair in Technology and Practice in Health. Her research interests include telehealth, organization of health services, professional practices and health information systems.

Julie Payne-Gagnon is a research professional at the Public Health and Practice-Changing Research Axis of CHU de Québec Research Center. An anthropologist by training, she currently works on the subject of implementation and use of information technologies in health care.

Jean-Paul Fortin is a retired Professor at the Department of Social and Preventive Medicine of Université Laval and researcher at the Centre de recherche sur les soins et services de première ligne of Vieille-Capitale Health and Social Services Centre. He developed an extensive expertise on ICTs in health and on the evaluation of health services research.

Guy Paré is Professor at the Department of Information Technology Management and holder of the Chair in Information Technology in the Health Care Sector of HEC Montréal. His research interests include change-related issues to the implementation of new technologies, the effective management of these changes and the use of information technologies in support to emergent organizational forms.

José Côté is holder of the Research Chair in Innovative Nursing Practices and full professor at the Faculty of Nursing Science of Université de Montréal. She is a regular researcher at the CHUM Research Centre and the recipient of a senior researcher-clinician grant from the Fonds de recherche du Québec en santé (FRQS). Her research focuses on the development, implementation and evaluation of cyberhealth interventions in the treatment of client groups living with a chronic health condition.

François Courcy is Professor at the Department of Psychology of Université de Sherbrooke. He is interested in the prediction of work-related counterproductive behaviors, the promotion of psychological health at work, the assessment and diagnostic of organizations, as well as staff training and work performance.