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COOPERATIVE LEARNING ENVIRONMENTS: VIRTUAL COMMUNITIES OF PRACTICE IN THE HEALTHCARE SECTOR

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Cooperative Learning Environments: Virtual Communities of Practice in the Healthcare Sector

ABSTRACT

This paper aims to examine the benefits the use of virtual communities of practice (VCoP) provides to professionals in the healthcare field. Conceptually, communities of practice (CoP) are supported by the Theory of Situated Learning, which highlights the importance of the professional environment and interaction with colleagues in the development of a practical learning.

In some professional areas, this way of creating and sharing knowledge has become a common practice. The intensive use of information and communication technologies (ICTs) has allowed VCoP to develop. With them, the process of collaborative knowledge construction is faster, more efficient and participatory. The set of benefits from the use of VCoP is also broad and diversified, reaching all the members of the community, both on a personal and general level, as well as the organisations where the members of the community carry out their professional activities at both management and performance levels.

KEYWORDS

Virtual communities of practices, collaborative learning, healthcare sector

INTRODUCTION

Based on situated learning theory, in which professional learning occurs through practical participation and interaction with colleagues, the term Communities of Practice (CoP) has evolved over time to refer to groups of people who share a concern or a problem and who come together to interact, learn and create a sense of identity, and, in the process, build, share knowledge and solve problems (Wenger, 1998).

In the business sector, CoPs have earned recognition due that their capacity to foster the professional development of the individual, as well as improve the business outcome for the organisation. Based on these claimed benefits of CoPs in the business sector, the creation of CoPs is being promoted in other professional fields such as the healthcare sector.

Initially, CoPs in the health sector have been used as a tool to drive knowledge management. But this use also makes it possible to obtain other benefits relative to the improvement of: (a) professional practice efficiency and efficacy (Diaz-Chao et al., 2014); and (b) healthcare organisational performance. Furthermore, it is recognised that CoPs have benefits in the social sphere, as a consequence of the increased social knowledge of the members, creating a people network in which there is a certain level of trust. In some places, the creation of CoPs is based on the use of ICTs so that the development of virtual environments not only helps the communication and the collaborative exchange of information/knowledge (Ranmuthugala et all., 2010) but also offers a potential solution to geographical spread (Norman and Huerta, 2006) and helps overcome the isolation experienced by healthcare professionals (Rolls et al., 2008).

The wide range of benefits offered by CoPs to the healthcare sector, particularly Virtual Communities of Practices (VCoP), points to the need for a deep analysis of this phenomenon. This paper therefore begins by showing that, in the healthcare sector, knowledge plays a strategic role in companies' growth and survival. Subsequently, we define the concepts of community of practice and virtual community, establishing the similarities and differences between them. We conclude the background section identifying the main benefits of using VCoP for healthcare professionals and healthcare organisations, as well as showing some empirical data obtained from the analysis of a Spanish VCoP. The final section presents the main conclusions obtained of the analysis as well as the principal research lines proposed.

KNOWLEDGE MANAGEMENT IN HEALTHCARE ORGANISATIONS

In today's society, knowledge is a strategic resource for organisations, and, for that reason, its management process has generated great interest among academics and professionals. Alicea-Rivera (2011) recognises that knowledge management has become a key element in the business environment. The central idea behind this new approach is, therefore, the need to motivate organisations to generate knowledge and information and to allow employee access to these databases and application for immediate use. In some situations, organisations need a constant flow of knowledge. Hence they have to intensify their search for strategies that can improve the processes of knowledge creation, acquisition and transfer (Ramalho et al., 2010). This is particularly relevant in health institutions because they are knowledge-based organisations in which all the processes that add value and meaning to the institution and give it an identity depend on the knowledge of their professionals.

Academic literature has defined knowledge management from various theoretical perspectives: strategic, technological and cultural or behavioural (Alicea-Rivera, 2011). For example, Peyman et al. (2006) and Syrme (1997) define knowledge management from a strategic perspective and show knowledge as a productive asset. Meanwhile, Pan and Scarbrough (1999) and O'Dell and Jackson (1998) introduce the technological perspective, showing that, through knowledge management, organisations can transfer the right knowledge to right people at the right time. Finally, Nonaka and Takeuchi (1995), and more recently other authors such as Bock et al., (2005), use the concept *organisational knowledge* instead of knowledge management to define the capacity of the company to create new knowledge and distribute it throughout the organisation. This definition implies the active intervention of the human resources in the knowledge management process. Recent research in confirm the importance of these three dimensions of knowledge management (Alicea-Rivera, 2011). Thus, as a systematic process, knowledge management involves finding, selecting, organising, extracting and presenting information in a way that enhances the understanding of a specific area of interest to members of an organisation (Payman et al., 2006). Furthermore, as Nie (2012) and Pan and Scarbrough (1999), among others, point out, knowledge management is an integrative process where: (a) information management, technology and human resources converge; (b) implementation aims to improve the processes with the greatest impact, and improve the exploitation of knowledge in terms of processes, and (c) there is distribution throughout the organisation, based on the intensive use of networks and technologies.

In the context of health institutions, the existence of a large pool of intellectual capital, which accumulates in the organisation of the institution, and without which they could not perform their function (Rammuthugala et al., 2011). The problem lies in the lack of mechanisms to facilitate the identification of that great intangible asset that allows the effectiveness and efficiency of the organisation to be increased. In addition, usually no strategies to facilitate the institution use the experience of all its members and use it to change, improve, adapt and innovate continuously designing.

On the other hand, is seen as knowledge management on learning-or training-continued its main tool. The management of an intangible asset which, like knowledge, is able to generate value for the organisation, is determined by how individuals capture, structure and transmit knowledge both inside and outside the organisation. And although two individuals sharing the same data may have different ways of acquiring and transmitting knowledge, because of their previous experiences and to the way they process knowledge (mental models), they will never have the same tendencies for action, or identical states of knowledge (Long et al., 2014; Godwin et al., 2004).

The knowledge and skills that health care institutions need to provide value are mostly found inside the organisations themselves. Both organisations and the professionals who work in them therefore favour the development of structures and processes that support (Barnett et al, 2013): (1) the identification and exchange of existing knowledge within the institution, (2) the creation of new knowledge and learning, based on collaborative work (Long et al, 2014; Gabbay and Le May, 2009). This is especially important due that the constant need to have an updated and pluridiciplinar knowledge lack of resources and institutions to carry out (Rammuthugala et al., 2011).

COMMUNITY OF PRACTICE: CONCEPT, SCOPE AND ENVIRONMENT (PHYSICAL OR VIRTUAL)

CoP arise in a context where there is a significant difference between what *should be done* in daily practice and what *is actually done*. At a formal level, there are manuals, and formal procedures that explain how professional practice should be. But, in daily practice, these manuals are considered too abstract and unhelpful when it comes to how to proceed and act in a complex situation.

People who form a CoP are linked to the development of common, recurrent and stable practice over time. This activity is the reason why the CoP is created, and based on it discussed and learned. (Wenger and Snyder, 2000). But unlike formal learning processes, the issues discussed in the CoP are those that are significant at a particular time for members of the CoP. They are discussed in practical ways, which means experience is a key element in the construction of knowledge

WHAT IS A COP?

Formally, the term CoP was proposed by Lave and Wenger in 1991. They showed that learning is more than acquiring knowledge; it involves a complex relationship between novice and expert, peripheral participation in practices, being socialised into the practice and developing an identity within the practice community (Wenger, 1998; Cox, 2005). More recently, the concept has been refined by Wenger to extend beyond the novice-expert relationship by focusing more on the interaction between individuals and the participation of people who are engaged in creating and sharing knowledge (Wenger et al., 2002; Li et al., 2009). In this sense, a CoP is described as an informal group bound together by a common interest or passion. Wenger (1998) suggests that there are signs indicating that a CoP has been formed. These signs include: sustained mutual relations; ways of communicating and sharing information that are facilitated by common understanding that might be unique to the CoP; forms of practice that assume shared implicit knowledge of process and procedures as well as a sense of "how things are going"; a sense of membership that has arisen from experiences of working together, and development of identifiable practice styles that are unique to the CoP. Egan and Jaye (2009), and Wenger (2009) identify three elements that define the characteristics of CoPs: he domain, is the area of shared inquire and "creates common ground and as sense of identity". It inspires members to contribute and participate, guides their learning and gives meaning to their actions. In fact, it is the element that makes possible mutual engagement among the members of the community (Egan and Jaye, 2009). Wenger et al, (2002) show how a domain it is not purely an area of interest; it is a key issue, problem or goal that members share. This is not fixed and may evolve with the CoP.

The community is the group of people who interact, learn together, build relationships, and, in the process, develop a sense of belonging and mutual commitment. Individuals become a community by interacting regularly in relationships in their domain. Interactions must have continuity and members need not necessarily work together on a day-to-day basis, nor do they have to be from the same profession or organisation (Ranmuthugala et al., 2011). However, these different professions or origins are no obstacle to community members having a sense of belonging or connection between them. It is through process of alignment that the identity and enterprise of the larger group can become part of the identity of participation in CoPs (Long et al., 2014; Godwin et al., 2004).

Alignment in this sense (Wenger, 1998) shares similarities with the notion of professional socialisation, which has been defined as the gradual development and identification with a profession along with an accompanying to the professional body (Egan and Jaye, 2009).

Based on this practice, the community creates a shared repertoire of resources which include normative, roles, behaviour and routines, tools, discourses, values and practices that may be both formal and informal (Egan and Jaye, 2009). Individuals acquire norms, discourses and other aspects of occupational culture over time, by processes which implicitly add meaning to what are explicitly interpreted as routine activities. In this sense, Eraut (2000) notes that implicit knowledge can be powerful and may override explicit knowledge, particularly as novices develop expertise.

SCOPE OF COP

The concept of *community of practice* is based on the premise that learning can be treated as a collaborative process. That idea is supported by constructivist theory, which shows how learning, as well as being a cognitive process developed by the individual, also has a social dimension (Duffy and Cunningham, 1996).

CoPs have become widespread in all areas of our society; However, CoP is not a concept used in all organisations. They are known by various names, such as learning networks, thematic groups, or tech clubs (Wenger, 2010). In addition, while they all have the three elements of a domain, a community, and a practice, they come in a variety of forms. Some are quite small while others are very large, often with a core group and many peripheral members. Some are local and some cover the globe. Some meet mainly face-to-face, some mostly online. Some are within an organisation and some include members from various organisations. Some are formally recognised, often supported with a budget; and some are completely informal and even invisible (Barton and Tusting, 2005).

CoP have been around for as long as human beings have learned together. At home, at work, at school, in our hobbies, we all belong to CoP, and usually more than one. People become members of CoPs through various trajectories, which include peripheral trajectories that might never lead to full participation and inbound trajectories that offer the prospect of full participation (Egan and Jaye, 2009).

In fact, CoP are everywhere. They are a familiar experience - so familiar perhaps that they often escapes our attention. Yet, when they are given a name and brought into focus, they become a perspective that can help us understand our world better. In particular, they allow us to see past more obvious formal structures such as organisations, classrooms, or nations, and perceive the structures defined by engagement in practice and the informal learning that comes with it.

The CoP concept has found a number of practical applications in business, organisational design, government, education, professional associations, development projects, and civic life. However, it has been in business field where this concept has been studied with greatest interest. In this sense, the identification of business performance outcomes, as well as the evaluation of CoP as a collaborative learning tool, are the most import research areas.

In the area of business, CoP are promoted as drivers of knowledge management and as a mechanism for sharing tacit knowledge, sparking innovation and reducing the learning curve for new staff, as well as a means of creating social capital and adding organisational value (Lesser and Stock, 2001). Clearly, they provide a means for knowledge to

cross boundaries, generate and manage a body of knowledge for members to draw on, promote standardisation of practice and innovate and create breakthrough ideas, knowledge and practices (Ranmuthugala, et al., 2011).

THE COP ENVIRONMENT: PHYSICAL VERSUS VIRTUAL ENVIRONMENTS

The intensive use of ICT, has encouraged the development of communities of practice in the virtual environment (VCoP). These arise as a space for conversation and knowledge sharing and a learning environment. A VCoP is a community of practice in which the links and relationships take place not in a physical space, but in a virtual space, like the Internet (Ramalho et al., 2010)

Physical and virtual communities have a high degree of similarity. However, the choice of one knowledge management model or another depends on the problem to be solved or the circumstances in which community members are involved. According to Lathean and Le May (2002) and Cook-Craig and Sabah (2009), some of the distinguishing features to be taken into account when deciding on the right model for achieving a specific goal, should be as follows (see table 1).

Table 1. Features and differences between physical and virtual communities

PHYSICAL COMMUNITY	VIRTUAL COMMUNITY
· Includes passive participants · There is a single focus of interest · The rules of mark issues outside the group · Low renewing members	· Includes only active participants · Have multiple conversations · The group sets the rules · Constant renewal of members

Source: Lathean and Le May (2002) and Cook-Craig and Sabah (2009)

Face-to-face and virtual communities are complementary concepts; social VCoPs are therefore an indispensable complement to communities of practice, where new technologies act as a tool to improve results (Wenger, 1998).

VCOP BENEFITS AT HEALTHCARE ORGANISATIONS

In recent years there has been a great interest in knowing about the benefits that VCoP offer their users. In this sense, Chan et al (2009), among others, show how: (a) there are different kinds, (b) they affect various agents and (c) they influence different levels of developed activity

Concerning their nature, Wenger et al. (2002) show that VCoPs offer not only tangible assets, such as professional skills and business outcomes, but also intangible assets, such as relationships between people, a sense of belonging and professional identity, as well as the creation of intellectual and relational or social capital. However, it is clear that being able to share and co-create knowledge is the main objective of VCoP in healthcare. In fact, it could be said that this is the reason for the community, making it possible to solve existing problems, both individually and collectively, in the short term. Meanwhile, in the long term, they involve an increase of intellectual capital available (Alicea-Rivera, 2011).

Meanwhile, the real scope of the benefits is high. Considering the beneficiary, it is possible to identify three types of benefits: individual, community and organisational benefits (Fontaine and Millen, 2004). Also, it shows how the impact of VCoP is different for people than for organisations. Regarding individuals, VCoP affect both the professional activity and personal lives of those individuals. Furthermore, membership of the VCoP also

affects the way relationships are established at a group level (Adams et al., 2012; Barnett et al., 2014). In relation to organisations, the impact consists of four levels: activities, output, value and business results (Berraies and Chaher, 2014; Chandler and Fry, 2009; Chang et al., 2009) Milne and Lalonde, 2007; Zboralski et al., 2006).

Ranmuthugala et al., (2011) show that VCoP supports practitioners in changing practice, implementing evidence-based practice or enhancing performance. Among others, Jiwa et al., 2009) and Ramalho et al., (2010) show that this can reduce diagnosis time or establish new treatments and protocols in emergency situations. Long et al. (2014) VCoP makes it possible to generate ideas for new services, practices and products. Communities of practice address complex dilemmas, such as improving quality and safeguarding high standards of care by fostering an environment for clinical care (Fung-Kee et al., 2008; Jiwa et al., 2009).

Concerning healthcare organisations, Lesser and Storck (2001) state that the benefits obtained are: improved productivity and the delivery of high-quality care in financially constrained contexts. The authors therefore show that health institutions have carried out excellent benchmarking and look to other industries for strategies – such as the promotion and fostering of VCoP – to improve organisational performance.

Finally, concerning the community that belongs to the VCoP, Fang and Chui (2006) show evidence that the emotional links between community members grow as more knowledge is shared between them. The relationship can be so intense that community members can create a sense of belonging and identity through shared activity and purpose (Adan et al., 2012; Wenger, 1998). This is particularly relevant in the professional field and highlights the role of VCOP as a tool to alleviate the degree of isolation experienced by the healthcare professionals. Barnett et al., 2014) and Rolls et al.,(2008), among others, show that changes in training from hospital to general practice can contribute to the development of different types of isolation, which, in turn, lead to a reduction in knowledge sharing (Cooper and Kurland, 2002); less intention to work in rural areas, and changes of career choice (Willians et al., 2001).

These claims have led to VCoP being promoted in healthcare as a tool for enhancing knowledge, improving practice and, in general, increase individual and organisational performance (Le May, 2009). Nevertheless, the real and bigger challenge in fostering a VCoP is the need to continuously supply knowledge, i.e., the willingness to continue knowledge-sharing. Most scholars dealing with this issue in relation to VCoPs have focused on diverse perspectives in order to explain what encourages VCoP members to voluntarily and continuously help one another through continuous knowledge-sharing.

CONCLUSIONS AND FUTURE RESEARCH LINES

The knowledge society has promoted a change of scene as far as the culture of knowledge is concerned. This is summarised in the enhancement of exchange among peers in a system where the value created is not dependent on hours worked, but rather on knowledge provided. The premium is for quality over quantity, which means it is necessary to organise overall time efficiency criteria. In addition, the workplace is irrelevant, as the technology eliminates barriers of space and time, while access to resources and the development of collaborative processes becomes possible. Finally, at this time of innovation, experience is, for the first time,

a tool for improving worker efficiency by allowing: (a) a reduction in the time required to solve problems; (b) an increase in the level of flexibility; (c) improved collaboration with other agents.

In this context, communities of practice provide a useful model for knowledge management of healthcare organisations and also a mechanism that facilitates and promotes a new way of working and learning based on collaborative work and the use of collective intelligence. If the virtual component is incorporated into the communities, this increases the benefits as much as the type of agents that perceive.

People, communities and organisations receive tangible and intangible benefits from participation in VCoPs. Fontaine and Millen (2004) report three benefits: individual benefits (skills, and know-how, personal productivity, job satisfaction, personal reputation and sense of belonging); community benefits (knowledge sharing, expertise and resources, collaboration, consensus, problem-solving and trust between members), and organisational benefits (operational efficiency, cost savings on service or sales, speed of service or product, and employee retention). Zboralski et al., (2006) reported participation outputs including knowledge effects (knowledge externalisation, preservation, documentation and distribution); business performance effects (improved business process, enhanced productivity, and innovation-enhancing effects) and socialisation effects (collective sense of ownership and common language).

Obviously, the use of VCoP is widespread as a tool for improving knowledge and clinical practice, increasing individual and organisational performance (Le May, 2009). However, the biggest challenge is getting the VCoP to provide knowledge continuously; in other words, achieving a continuous exchange of knowledge among community members. In this sense, most of the studies in relation to VCoP have focused on the different perspectives in order to explain how VCoP encourage members to volunteer and help each other continuously through continuous knowledge exchange.

Among future research lines, it can highlight those focusing on the analysis of the degree of user satisfaction with VCoP in such diverse aspects as: (a) the partnership between community members; (b) the quality and usefulness of the knowledge created, or (c) benefits of belonging to the community. Another line of interest also setting the research agenda in relation to VCoP examines the relationship of the virtual community with the institution in which the individual operates. The possibility of integrating virtual communities as a tool for organisational self-management; the synergies between the VCoP and the institution, and the analysis of the results at organisational and management level are among the aspects to be considered in the development of future research.

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