

**KNOWLEDGE MANAGEMENT:  
FOR A UNIFIED VISION OF PROFESSIONAL PRACTICE AND CONTINUING EDUCATION<sup>1</sup>**

**France Henri, Claude Ricciardi Rigault, Céline Desjardins  
LICEF Reserach Centre, Télé-université**

**Rational**

Among problems to solve in education and in society in general, there is the gap found in almost all sectors of human activity between work on one side, and training on the other side. This situation is amplified by the breach between urban and rural regions. Such handicaps have important economic and social repercussions. Our research intends to deal with this question taking in account two specific parameters:

- the telelearning model that has the capacity to fill in these two gaps;
- a unified vision of continuing education and collaborative work that offers a conceptual and strategic approach for the knowledge society.

Health sector is one of the professional milieus where these gaps are severely experienced. But some instantiations of our approach already exists in this working environment. One of them occurs at least in hospitals where medical teams of specialists have set up working sessions where complex cases are presented, examined and discussed. Doctors as well as students participate in these meetings combining academic aspects of medical education and clinical aspects of the medical practice. These discussions between colleagues contribute to support practitioners' competency and represent a major intellectual stimulation for them. For students, it is an essential part of their training. However, most of the times, these meetings are held in the same site leaving in isolation remote specialists and their team preventing them to benefit of this training space tightly embedded with practice. Furthermore, there is no mechanism to store, retrieve, process and reuse the precious information and knowledge transmitted during these meetings. This is where the junction of the telelearning model and knowledge management finds its place and leads to the subject of this research.

**Context and subject of the research**

Our research is conducted with a team of lung specialists from Sacré-Cœur Hospital of Montréal. This team meets on a weekly basis to conduct case studies. After the presentation and discussion of each case, a conclusion is drawn suggesting further investigation, diagnosis, treatment, or, sometimes, no conclusion at all. Once a month, these case studies are conducted at a distance by videoconference with their partners' radiologists from Maisonneuve-Rosemont Hospital in the Montréal area. For both teams, case study is a means to improve their professional practice, a way to find support when dealing with extremely difficult decisions. It is also an efficient method for continuing education, especially when the presentation of a patient's case is supported and documented with recent research results and literature review. Conscious of the potential of this approach, they are seeking a way to take better advantage of the case study method, conducted face to face and at a distance, by using information technology.

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Our research is an attempt to answer the needs of this medical team by offering them access to a technological environment optimising case study and by testing a videoconferencing technology for their distance meetings. Our project is a threefold one dealing with:

- the development of an information system as an added value to case study,
- the evaluation of a videoconferencing technology with proper medical imagery transmission components to support their collaboration with remote colleagues
- the development of a conceptual and strategic approach based on knowledge management to connect tightly professional practice with continuing education.

### **Goal and objectives**

While contributing to the development of conceptual and strategic approach to continuing education, our research aims at the development of a technological environment, including an information system and a videoconferencing device, allowing medical professionals to conduct case studies more efficiently on a synchronous mode, in face to face situations and at a distance by videoconferencing, and asynchronously.

#### *Objectives*

- Based on a need analysis of the team of lung specialists, to develop and test the prototype of an information system allowing storage, retrieval, process and reuse of information and knowledge transmitted during case studies.
- To evaluate a videoconferencing device specially adapted to support human interaction and the transmission of medical imagery.
- To conduct content analysis of patients' cases studies conducted face to face and at a distance in order to decrypt how knowledge is developed and capitalised by the medical team in a case study situation.
- To develop a conceptual model of a learning/working environment for medical practitioners unifying practice and continuing education.

### **General methodology**

Each component of our research commands a specific methodology. Three approaches will be used:

1. research and development method is suited for the development of the information system;
2. evaluative research method fits for the evaluation of the videoconferencing device;
3. qualitative exploratory methodology combining content analysis and modelisation methods will serve for the development of the conceptual model of the learning/working environment.

1. The information system<sup>2</sup> consists of a knowledge base of relevant information extracted from cases previously discussed by the team. The number of cases stored in the system will increase gradually by adding data after each meeting. During the case study meetings, the system will be used either to do the follow up of a patient's or to serve as a reference or example to support a decision. After case study meetings, doctors who were not able to attend will be able to access the information for their own personal benefit and/or to add comments on the cases. This comment function could start up a dynamic and interactive asynchronous discussion process. The test of the prototype will include not only the technological aspects of the system but will primarily deal with the use of the system by the medical team.

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<sup>2</sup> The system is based on NOMINO technology developed by ATO and LICEF Research Centres.

2. The videoconferencing device that will be experienced is specially adapted for the digital transmission of radiographs, CT scan, microscopic pictures, tests results, etc. The evaluation of the system will focus on the quality of the imagery transmission as well as the dynamic of the human communication and the use of the information system when the team meet at a distance.

3. The development of the model of the learning/working environment is the third aspect of the project and represents a more fundamental contribution to research. Over a period of 10 weeks, case study meetings will be fully recorded giving us some forty to fifty cases to be analysed. The NOMINO technology will be used to conduct semi-automated content analysis. Grids and categories that were developed in previous research will also be used. The result of this analysis will provide representations of argumentative structure of the discussions that will serve as an input to develop the model of the learning/working environment.

In this research, confidentiality and access to private information are two major issues.

### **Summary**

This project we will try to assess the benefit for a medical team of an information system based on case study discussions. For this purpose, we will observe to what extent it is used, how, when and for what purpose. We will also evaluate the capacity of the videoconference system to support communication and interaction among participants during case study meetings and the quality of medical imagery transmission. Finally, we will conduct content analysis to determine how the verbatim of discussions carried on by doctors during case study meetings could serve as input for continuing education.