Collaborative Environment for Remote Clinical Reasoning Learning

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ABSTRACT

Despite the significant advances achieved these recent last years in terms of technologies widespread use in medical education, clinical reasoning learning (CRL) remains an extremely hard task in which there are still many gray areas that should be enlightened to better understand it. Furthermore, while CRL is basically a collaborative task implying the participation of many students and tutors working simultaneously on a same case, it should be considered from a social perspective. The authors followed then a collaborative-based learning approach, which consists in designing a shared workspace to support collaboration and enable social clinical knowledge acquisition. They started with a deep analysis of the CRL process in order to understand the usual way under which students learn together and then, highlight the vital collaborative learning tasks that need to be supported. The resulting designed model allowed us to shift towards Collaborative CRL (CCRL).

KEYWORDS
Clinical Reasoning, Collaborative Learning, Group Awareness, Medical Diagnosis Training, Social Knowledge Building Synchronous/Asynchronous Interaction

INTRODUCTION

The considerable advances achieved by information and communication technologies (ICT) these last recent years and their large use in the society had a direct impact on the medical education world (Ladner et al., 2010; Ranasinghe et al., 2012; Srivastava et al., 2014; Guze, 2015), especially by providing learners and teachers with highly valuable sources of knowledge. However, although these technologies provide effective means of gathering information about various topics of interest and enable different learners to easily acquire knowledge (Woreta, Kebede, & Zegeye, 2013), they are still inadequate and insufficient to support collaborative clinical reasoning learning sessions (CCRL) that are the main matter of this paper. Consequently, we decided that in-situ learning activities should first be carefully analyzed in order to better understand learners’ specific needs while dealing with a common clinical case. Such approach seems to be promising and we shared then the point of view of Doleck’s research works (Doleck et al., 2015).

It is also more than necessary today to quickly provide for Algerian medicine faculties the appropriate technological solution in order to qualify them to better meet public health institutions expectations (Arrada, 2014; Saihi, 2014; Legros & Chaoui, 2012). Indeed, numerous healthcare institutions across our vast country, especially those located inside or in the south, suffer from the lack of specialized doctors and generally have, in the best cases, recently qualified general practitioners (AMH, 2011; AMH, 2015). Such fact has also been acknowledged by many specialists affiliated to the Maghrebian Health Agency (MHA) as Chachoua (2014) who has attempted to assess the Algerian...
health system evolving since the independence of Algeria in 1962 or others that have explicitly noticed an alarming imbalance in terms of medical staffs through the national territory (Zehnati, 2010; Abid, 2014) as well as the health situation of the country that is characterized by its large regional disparities in terms of health facilities and human resources (Ghedia, 2013). Finally, a study that has been achieved by Algerian experts in collaboration with the Mediterranean Economic Forward Planning Institute (MEDEFPI) on the state of the Algerian health system (Legros & Chaoui, 2012), has provided a statistical report that is worthy of interest.

Consequently, recently qualified doctors are constrained to take in charge medical services and should face a great patients’ affluence as mentioned by the World Health Statistics report (WHO, 2013) while having in fact, only a very little experience in terms of clinical reasoning (CR). Therefore, they are not effectively qualified to provide assistance for many patients who need it more. Such observation is all the more alarming when one considers that the inconsistency of their training does not even allow them to deal with diseases that can be prevented. It seems also obvious that the lack of a viable training strategy of CR is a fundamental issue for developing countries like ours. We focused then our attention on the adequate way to support the efforts undertaken by the medicine faculties to improve CR teaching. Regarding to these concerns, we considered some relevant works such as those of Croskerry & Nimmo (2011) who has reported an interesting study showing the impact of clinical reasoning learning on diagnosis errors, as well as Lawson & Daniel (2011), who has analyzed in-depth the complex process of CR and attempted to find out how and where errors might arise within the diagnosis.

It should be noted that the work described in this paper does not intend to reinvent a new medical education syllabus, but rather to complement it through using ICT and objectively responding to the vital needs of our public health care system. Keeping this in mind, we have conducted a detailed study on the public health sector in order to gather as much evidence and relevant information to our research. Notably, through the study of several recent national research works (Harouche, 2014; Saihi, 2014; Arrada, 2014). We also attempted to exploit the results of Frantz’s study (Frantz et al., 2015) to highlight the key factors that may allow us to effectively improve the medical training process.

The work discussed in this paper is an attempt to model the clinical reasoning learning process in a collaborative context. Our approach is based on a situated observational study achieved with recently graduated students during their internship within a gynecology and obstetrics emergency unit, as agreed with our partners in the faculty of medicine. The enrolled students already had a consistent theoretical background that predisposes them to CRL. They were organized in small groups to diagnose a common patient complaining and the study aimed to collect as much as possible significant information during the planned collaborative learning sessions. We had recourse to interviews and explored students’ interactions as well as observations during their CR learning sessions to better understand the usual way under which students’ learning is effectively completed. The second stage of our research work is to use the collected information through the study performed to highlight the appropriate design guidelines of our shared learning workspace.

**CLINICAL REASONING (CR)**

In the medical education field, the major of the definitions related to the clinical reasoning process that have been proposed agree on a common point. It is about the perception of such process as a set of mental activities that allow the clinician to make the right decision while dealing with a specific clinical situation (Barrows, 1980; Higgs, 2008). Furthermore, studies that have been achieved in this area have revealed that doctors use diverse methods of reasoning. These methods are mainly based
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