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USING A CASE-BASED REASONING APPROACH IN ON-LINE LEARNING: IN LEARNING ABOUT RURAL PRACTICE

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Abstract

This paper describes the early work undertaken in the design, and implementation of an on-line learning environment created for the Master of Rural Health (MRH) program at the University of South Australia using a Case-Based Reasoning approach. Utilising the UniSAnet version2 platform a template for the MRH program was created.

The Master of Rural Health program primarily caters for the professional needs of health and human service personnel who are living and working in rural Australia. The content of this program reflects contemporary issues in health and human services where learners have the opportunity to hone their skills in managing human, IT as well as other resources vital for effective practice and functioning in health related organizations. Many professionals find rural practice to be isolating and for this reason we adopted a Case-Based Reasoning (CBR) approach as the conceptual framework for the courses offered in this new program enabling practitioners to interact, react and learn from a repository of expert cases that is made available on-line. The discussion gives insight to life and work in rural communities and the learner experience in the course entitled 'Practice in Rural Communities'.

Keywords

Case-Based Reasoning, ill-defined unstructured problems, authentic situations, collaborative learning, learning from experts

The On-line Master of Rural Health Program is a Whyalla Campus initiative and consists of 8 courses and a minor research component involving 18 units, the equivalent of 4 courses. In this paper we report the initial learner experiences in one course, 'Practice in Rural Communities'.

Theoretical orientation

The value of providing learners with rich authentic experiences that reflect real world ways of knowing in practice is well recognized. CBR is a problem solving technique.

The technique involves utilizing complex authentic situations in which students are placed by allowing them to learn to think like an expert practitioner, which reflects the view that learning is a process of moving towards greater expertise. CBR thus provides a rich learning environment for learners to explore problem solving through expert knowledge gained from experience. The cross discipline enrolment of students in the MRH program allows learners the opportunity to examine and learn from expert cases from a variety of health related perspectives (Ertmer & Russell, 1995; Kinzie, Hrabe & Larsen 1998). The authentic experiences stand to inform students of real world ways of knowing and doing. Learners also have the opportunity to share their experiences with their peer group in a collaborative learning environment. Such an environment allows the learner to think and act as a practitioner albeit temporarily by making mistakes if necessary within the safe confines of the learning environment.

Providing a rich context where expert cases is presented to learners in a constructivist learning environment allows learners access to experiences which they have not previously encountered (Jonassen 1999; Honebein, Duffy & Fishman 1993). In this environment the use of cases as a way of recording situated knowledge is made available to the learner. CBR therefore becomes a natural extension of the ability to learn from previous experience (Schank & Cleary 1995). CBR enables learners to solve new problems by adapting previously successful solutions to similar problems. Hence, CBR complements human reasoning and problem solving.

The Case-Based Reasoning architecture in the MRH Program utilises a repository of expert cases, by identifying significant features that describe a case to emulate the realities of practice situations. The authentic situations places the learner in an inherently interesting position by providing the opportunity to interact with expert cases and solve problems presented in the real world of rural practice. In this environment, students learn by acquiring new knowledge as cases. An expert case in this environment represents a contextualised segment of knowledge illustrating an experience. It contains the past lesson, which is the content of the case, and the context in which the lesson is presented (Alterman 1989, David 1991, Kolodner 1993). Learners derive solutions to similar or new problems by using cases that comprise problems and solutions.

UniSAnet Platform

The architectural design of the Master of Rural Health Program was developed using the university's platform UniSAnet, which is the platform, developed by the University of South Australia that empowers authors to create their own online learning environment. Inbuilt UniSAnet tools assist authors to build a website structure, add folders and pages, upload documents and link to external websites. Web pages are edited using Microsoft Word, thus removing the need to understand HTML coding or other web development software. Interactive learning tools, an integral part of the MRH pedagogy, can be created easily. Submission of assignments and course evaluation is also processed online. UniSAnet provides a robust platform that helps authors successfully create and administer the interactive online learning environment surrounding Master of Rural Health courses.

Practice of Rural Communities

Practice in Rural Communities' was the first online course developed for the Master of Rural Health. The focus of the course is related to introducing health professionals to practise in rural communities, thereby enabling the learner to discover the dynamics of rural communities and infrastructures, the knowledge and skills required for effective practice and a framework for enhancing service delivery.

Constructivist approaches to learning acknowledges that learning is an active process of constructing rather than acquiring knowledge and instruction is a process supporting the construction of knowledge rather than communicating knowledge (Duffy & Cunningham, 1996). In keeping with this approach to learning, students were introduced to rural practice by way of accessing a rural community with ill-defined complex problems for which they were required to provide solutions. The customised program provide general information to study on-line as well as course specific information such as aims and objectives, learning resources includes reference material via the university library, utilising the case-based reasoning approach and accessing expert cases, and assessment activities. Learners also had a clearly identified schedule of activities, which they had to meet during the semester. Learners are required to meet these tasks during the semester by providing individual responses to some activities while others require collaboration with peers by engaging in on-line discussions with them.

The course adopted a strategic and a planned approach in introducing learners to issues faced by rural practitioners. The assessment tasks were based on a major simulation exercise where learners were required to think like a practitioner in a rural location and work through professional and personal issues that they were likely to encounter in rural practice. They were also required to develop strategies for life and work in rural communities. They were working with a hypothetical mentor (course coordinator) whose responsibility was to ensure the learner's smooth transition from urban to rural practice. The real life tasks ranged in complexity over the course of the semester with learners engaging in a major community issue to solve a complex community problem associated with domestic violence, which was graded. The expert cases made available to learners in the form of a repository enabled them to interrogate these cases and gain insight as to how experts would act in similar situations. The learners interacted with expert cases as they worked through the set tasks and sought solutions to complex issues surrounding domestic violence.

The learners armed with a wealth of experience and discipline specific knowledge were quick to respond to the discussion forum where they eagerly shared their ideas with others. The active participation in discussion and sharing of information was at times challenging to learners and was reported to facilitate their understanding.

Conclusion

Practice in rural communities is the first of eight courses developed in the Master of Rural Health Program using the UniSANet platform. The data derived from the on-line communication shows that all learners were active participants who made regular, significant contributions to the discussions and for several individuals this was their first encounter with on-line learning. Learners also discussed how the assessment activities really tested their knowledge and saw that they gained much from undertaking this course as it had provided them with ideas on how to respond to community problems, a skill that they had not envisaged at the beginning of the course. They were able to comprehend the unique requirements of working as a professional in a rural community and the strategies for working with communities that needed their assistance.

In a sense, the peer community that evolved during the course of the semester was self-sustaining and they exchanged ideas and drew on each other's experiences, as well as expert cases to support new understandings about the concept in question and examined potential strategies for supporting communities to deal with domestic violence. These activities were linked to summative assessment in the course. As graduate students and practising professionals these learners valued the challenge of on-line communication by sharing ideas and developing their understanding through social interaction and discourse which was highly regarded by the peer community. Our experience in this course will influence the development of other courses in the MRH program.

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