Collaborative Knowledge Management Requirements for Experiential Learning (CKM)

Brian J. Garner
Professor of Computing, School of Computing & Mathematics
Deakin University, Geelong, VIC 3127
Email: brian@deakin.edu.au

Abstract

Exploratory studies in Collaborative Knowledge Management (CKM) across four domains have identified significantly expanded research requirements for experiential learning. This paper reports preliminary conclusions/propositions. The quality of collaborative (group) learning, particularly in experiential processes such as problem solving and professional practice requires innovative support of knowledge-mediated, human interaction requirements and the associated sharing of knowledge between participants.

1. Background

Our research investigates the technical framework for CKM processes that support:

1. Learner activation of, and access to, stored knowledge.
2. Knowledge as Contextual forms and reference models.
4. Context mining algorithms that accelerate the learners' acquisition of problem solving skills and professional practice effectiveness.

The significance of future research, in association with Dr. McKay and Professor Okamoto, lies both in the development of novel evaluation instruments for measuring cognitive performance improvements derived from external knowledge (contexts), and in the discovery of new instructional strategies that activate context-mediated reasoning processes within a given cultural metaphor.

2. Role of Collaboration Frameworks in Knowledge Management

The study of collaboration frameworks in a number of domains has identified six (6) significant roles germane to the requirements of experiential learners in an Asynchronous Learning Networks (ALN) environment:

1. Basis for Issues Management Determination (eg Global Tax Harmonisation initiatives)
2. Common focus on Ontological engineering
3. Source of explicit Process Knowledge (eg in Professional Practice)
4. Structural Knowledge for Business Modelling (eg Scenario Definitions)
5. Elaboration of Behavioural Patterns:
   - Role <-> Actor relationships
   - Activity definitions
   - Contextual Forms
6. Specification of Knowledge Integration Requirements:
   - Common notation for knowledge transfer.
   - Formalisation of the model dynamics
   - Specifications for Knowledge Domains may be formalised
     (Garner and Lawrence, 1998)

2. Human aspects of Knowledge Management

Davenport & Prusak (1998) define knowledge as

a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the mind of knowers. In organisations it often becomes embedded not only in documents or repositories but also in organisational routines, processes practices and norms.

The effectiveness of CKM frameworks is thus seen to lie in the motivational value of context-mediated, spreading activation mechanisms for experiential learning, and in the associated meta-knowledge acquisition strategies (Garner, 2000), given that there are two classes of knowledge involved in professional practice:

1. Formal Knowledge
2. Informal (tacit) Knowledge (cf Nonaka-Takeuchi)

4. Preliminary Conclusions/Propositions

1. Thematic interpretation of human discourse patterns and group interactions during knowledge transfer processes requires a personalised knowledge dictionary for each participant (refer Figure 1)
2. Novel activation mechanisms may be discovered in CKM frameworks, due to the
fact that tacit knowledge provides the process frameworks for our understanding of human behaviour, and the consequential demand (inferred) for new contextual forms of human interaction.

3. Dynamic contexts, requiring dynamic knowledge fusion (Garner & Lukose, 1992), justifies the paradigmatic approach to CKM, in contrast to contemporary implementations of knowledge management, which are largely based on static data/knowledge structures.

4. Context mining (i.e., the discovery of new contextual forms) is the essential tool for evaluating the effectiveness of collaborative knowledge management through the identification of thematic behaviour patterns.

5. References


Figure 1: Knowledge Dictionary Structure (Garner & Lukose, 1991)