Application of Knowledge Management in Reusable Web-based Learning Systems

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Abstract
This research is focused on the use of knowledge management techniques to develop reusable web-based intellectual assets to leverage the learning process for individual learners. The literature review reveals that corporate solutions of knowledge management are not directly applicable due to the lack of adaptivity needed to provide individualized feedback to the learner, and their localized nature that does not directly deal with authentication and verification of distributed information. Architecture has therefore been formulated for the knowledge management system that specifically supports web-based learning.

1. Introduction

Current educational process indicates that learners are mostly overloaded with information but, at the same time, they are not able to grasp the fundamental concepts behind the theory. This generally results in learning-by-rote. This phenomenon is especially true during the training of application of complex concepts with steep learning curve, where initial mistakes by students are not corrected immediately hence leading to wrong neural connections and eventual failure. This erroneous learning process is repeated year after year by different student groups and the entire process recur resulting in frustration and inefficiency. The problems are aggravated at high magnitude when learning takes place in a distant environment.

Internet based knowledge management systems can prove to be efficient solution to manage these problems. It seems, therefore, important in this competitive environment to make the best use of the technological explosion and improve the productivity through achieving reusability and enhancing educational services to the learners. In this context, this research is concerned with the alternative ways of knowledge acquisition, integration, management, retrieval and dissemination of intellectual assets among wide variety of audience to leverage their learning.

2. Work in Progress

As part of the PhD research, a comprehensive literature review has been conducted in the area of knowledge management, with particular focus on its applicability in academia. The report looks at the concepts related to knowledge management namely acquisition, elicitation, representation and retrieval of knowledge. Also, comparison is made between knowledge management and other related areas like information management, document management, artificial Intelligence, etc. This gives an idea of how this field is different from other related fields. The report examines the difference between data, information and knowledge. Success of knowledge management and its links with Information technology is also investigated in the report. Distinguishing tacit knowledge and explicit knowledge helps in identifying the special role of transforming these in knowledge management system. Important issues related to knowledge management like cultural, structural and process issues are discussed in this part of the report. Finally this report looks at the challenges to its success.

Available knowledge management systems and knowledge management tools in academic environment has been evaluated and a preliminary report has been written. Various knowledge management systems and tools like Wincite 5.0, FuzzyClips, Grapewine, and KnowledgeX etc. are investigated in the report. Further examination needs to be made to see the availability and use of commercial knowledge management system in the market.

The applicability of knowledge base structure and Internet based learning has also been examined. This part of the report investigates the types of knowledge base structure used in Internet based learning scenarios and looks at the adaptability of these structures in knowledge management in learning environment. Considering the information and knowledge available in the Internet is in heterogeneous format, the report looks at what kind of knowledge base structure is appropriate for the knowledge management in learning situation.

Work is also progressing on an ABRF project which looks at one of the aspects of knowledge management in learning environment namely query aspect of knowledge management. The aim is to develop
a knowledge management system for Internet based intellectual assets to leverage the learning process for individual learners. Since the literature review reveals that corporate solutions of knowledge management are not directly applicable due to the lack of adaptability needed to provide individualized feedback to the learner, and their localized nature that does not directly deal with authentication and verification of distributed information. This project aims to integrate the users profile and users to query to search for the required result. One of the special features of the system is to authenticate the reliability of the information. The discipline selected to test the prototype system was database concepts and tools. The choice of this domain stems from the fact that application of requires familiarization with numerous procedures. Most Internet based sources provide very generalized instruction of these procedures without effectively relating them to the individual learner’s attributes, hence resulting in learning-by-rote due to no reflection possibilities on the part of the learner. This makes this domain one of the best candidates to test the effectiveness and efficacy of the prototype, which is meant to provide individualized instruction.

3. Methodology

A conceptual framework will then be formulated to understand the processes involved in creating and development of knowledge management systems in distant academic environment. Based on this theoretical research work, a prototype system will be developed which will aim to guide the learners either in a guided discovery learning process or an exploratory learning process, based on the behavioral attributes of the learner. Needs of the learners will be surveyed and categorized into various levels. Knowledge base will then be developed to test the system, the result will be interpreted, and a generalized recommendation set will be developed. We plan to use the discipline of “database tools and associated concepts” for our prototype.

4. Benefits and Conclusion

The results of this research should not only augment the teaching abilities of the provider and foster the learning abilities of students but also open new ways of integrating knowledge management concepts in the learning systems development process. Outcomes of this research are expected to result in better reusability, sharing, pooling and collaboration in the learning process. Quality of knowledge transformation should also be enhanced, giving a strategic and competitive edge to the academic institutions involved in distant learning, and eventually reengineering the academic atmosphere to enhance quality and productivity with the application of technology. There is a lot of scope for developing knowledge management for learning environment, in particular web based learning, as there has not been much research in this area of knowledge management.

Selected References