A STUDY ON KNOWLEDGE MINING IN WEB BASED LEARNING ENVIRONMENT

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Abstract—For the past several years data mining fields has been rapidly increasing and attract many researchers and users. This reason for such rapid growth is essential need to derive the useful knowledge automatically from volume of data which is accumulated and shared worldwide. From that storage education, a web based learning environment may develop to offer a practical tool for instructors and learners to use the knowledge for teaching and learning. Web based open and dynamic learning environment to be personalized support for learners. In this paper we give a study of knowledge mining in web based learning environments

Keywords-component; formatting; style; styling; insert (key words)

I. INTRODUCTION

The discovery of hidden knowledge stored in various formats and places in large data repositories. Knowledge is a valuable asset to most organizations as a substantial source to enhance organizational competency [10]. Researchers and practitioners in the area of knowledge management view knowledge in a broad sense as a state of mind, an object, a process, an access to information, or a capability [1]. Information about knowledge can be stored either explicit or implicit [2][3]. The explicit information of knowledge can be retrieved through existing tools using database technology. According to the implicit knowledge, it is not possible to retrieve and achieve easily. Specific tools and suitable environments are needed to extract such knowledge. Snen Jie, Wei Liu-hua[4] proposed a model to achieve time effectiveness and context related characteristic method. This platform comprehensively considers the real time characteristic and semantic attributions of web knowledge, improve the knowledge precision and utility, and lay the basis of web learning environment. Nittyaa Kerdprasop and Kittisak Kerdprasop [5] proposed a model to manage knowledge in the we based learning environment. Knowledge management in top level is shown fig 1. From the data and knowledge repositories, finds information processed in the indexing and mapping stage. This stage is very much support to find suitable contents to the web learners.

Marcello Castellano [6] proposes a knowledge mining architecture for providing web learning environment that is an integrated architecture that takes the user and the various Knowledge mining service in web learning environment through the knowledge discovery process in a unique. The system proposed by them is to define and validate a sequence of steps that can be followed for all mining activities [7], such a process that is generally applicable in different web learning environment and describes how to identify interesting and new patterns by covering the whole process of the knowledge discovery. The system has to be seen within a distributed data and web mining environment, where a set of services are managed and made available [8].

In[12] Puvaneswary Murugiah, Hanifi Atan given the comparative study of constructivist and content based approach for mined knowledge in web based learning environments. According to this the learning occurs in the web learning environment and the teachers act as a facilitator. The teacher does not deliver course content but give guidance to learners in the process of discovery, inquiry and analysis. It is very suitable for web based learning environment.
II. WEB BASED LEARNING ENVIRONMENT

The basic feature of Web-based learning environment is the presentation of various lessons using multimedia material such as text, animation, graphics, video and sound with convenient communication tools. Our first Web-based course “Introduction to MEMS”, offered by the University of Michigan, was scheduled for the senior undergraduate and first year graduate learners at the school of Engineering at the University of Puerto Rico, Mayagüez campus in the fall of 2004. This course introduces learners to a rapidly emerging, multi-disciplinary, and exciting field: Micro Electro Mechanical Systems. The course home page provides well designed Web-based learning environment with featured instructional materials in a multimedia environment. It constructs with learning resources materials: a collection of 43 downloadable lecture notes, synchronous lecture video for each lecture session, homework problems, additional readings and exams; learner supports materials: syllabus, course outline, project guideline, instructor and teaching assistant’s contact information, technical support; and various communication tools and evaluation tools for learners to engage collaborative learning, such as synchronous chat room, group emails, and asynchronous discussion board. Each lecture is devoted to a particular topic that is complementary to lectures and course materials. The discussion sessions are intended to facilitate learners’ construction of knowledge through participation and reflection. The course website technically provides sufficient learning resources and communication tools to build a collaborative learning environment via Internet.

According to web based learning environment(WBLE), the two designs are specially developed . Content based and constructivist WBLE

A. Content – Based WBLE

Dick and Carey Model [10] approaches content – based WBLE design and adopted. This model consists of basic information, lesson objective, content delivery and provision of question answers and example. The learning process on content-based WBLE is one way didactic knowledge transmission from the contents to the learners. No collaboration of facilitation is involved in this process. It involves learners accepting and memorizing the facts given in the web pages and recalling the materials learned whenever required. According to Content-Based WBLE , it is expected that high mean values would be obtained on item related to the course contents on the CBL approach.

B. Constructivist WBLE

The design of constructivist web based learning is adapted from Interpretation Construction Design Model proposed by Black & McClintock[3]. The model consists of construction, interpretation constriction, contextualization, cognitive apprenticeship, collaboration and multiple manifestations.

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III. BUILDING A WEB-BASED COLLABORATIVE LEARNING ENVIRONMENT

Although the course website has all the necessary learning resources and communication tools, however, collaborative learning environment via Web is not a synonym which indicates the learners working in groups, and is not just to assign a team project to learners. Collaborative learning is a teaching strategy in which small teams use different earning activities to improve their understanding of a subject and foster creative thinking. In order to building a Web-based collaborative learning environment, there need to have five key elements: effective team work, positive interdependence, individual accountability, communication and leadership. The course was intended to implement these elements to promote learner learning experiences.

The learners were allowed to form a group of three or four. Interdependence and individual accountability were demonstrated at the beginning of the semester that each member of the group is accountable for their individual learning performance and contributions to the group success. The team's success depends on the individual
learning of all team members. The group project was also assigned to have common goal that can only be achieved by working together. The results have shown that effective team work allows learners to develop strong technical skills, as well as the critical value skills related to effective interpersonal and collaborative communication, and better-developed collaborative and leadership skills.

Communication is considered as the most important element for collaborative learning procedures. In our course, the learners were encouraged to use all the communication tools available to interact with course content, discussion, the instructor, and their peers and to participate all the activities.

One of our efforts was to assign a group leader and make the learners aware that leadership is crucial in collaborative learning, and the role of a leader is to keep the group focused on the assigned learning task, and make sure that all members of the group have an opportunity to participate in the collaboration.

Our experience told us learners should be well equipped with collaborative skills, communication skills, creativity, critical thinking skills, and skills in using information technology to be responsive to the changing requirements in the Web-based learning environment. The success of building a collaborative learning environment via Internet depends on not only the learners with fully active involvement but also the fact how instructor, teaching assistant or coordinator interact with learners and spend more time guiding learners through the questions and activities. But it truly takes a lot more time than classroom-based collaborative learning.

IV. KNOWLEDGE MINING IN WEB BASED LEARNING

Three modules has been proposed in [13] for Knowledge discovery and web based learning fig[2].

A. Learning Management Modules

According to this module it supports instructors to store syllabus, class schedules, lecture notes, assignments through Web browsing tools. It give the feasibility to conduct assessments tests in the form of online test, quizzes and different form. It supports learners to submit assignments remotely either as file upload or interactive through web. And also it provides profiling too to collect personal data of learner and tracking tool to observe learns actions and feed back.

B. Content Management Module:

It provides the support the content developers in importing and exporting content through the authoring tools and also it has interface with learning management modules in getting desired form for delivered content and data repository containing learners personal information and other metadata including knowledge assets created by knowledge management modules.

C. Knowledge management modules

It discover valuable knowledge asses from the data repository containing learners personal data tracked date of learners performance and behavior , and data related to content sequences that were presented in the past with the evaluation results according to that content sequence. And also it provides indexing and mapping of knowledge assets that are discovered by the knowledge mining engine.

V. BASIC REQUISITES OF A KNOWLEDGE MINING ARCHITECTURE

Knowledge Discovery is an interdisciplinary area focusing upon methodologies for extracting useful knowledge from data. The ongoing rapid growth of online data due to the Internet and the widespread use of databases have created an immense need for discovering methodologies. The challenge of extracting knowledge from data draws upon research in statistics, databases, pattern recognition, machine learning, data visualization, optimization, and high-performance computing, to deliver advanced business intelligence and web discovery solutions [1]. The realization of a general purpose, fully automated, knowledge discovery system is difficult to obtain and in last years many issues of research have focused on ways of manually applying traditional machine-learning and discovery methods to data stored in databases. Recently, a deep attention has been
moving towards more fully automated approaches. The Knowledge Discovery in Databases (KDD) Model proposed by Piatetsky-Shapiro, Matheus and Chan [2] represents a starting point for our solution. They defined a system as a collection of the following components:

- Database Interface, to manage database queries;
- Controller, to control the invocation and parameterization of other components;
- Knowledge Base, to contain domain specific information;
- Focus, to determine portions of data to analyze;
- Pattern Extraction, to collect pattern-extraction algorithms;
- Evaluation, to evaluate the interestingness and utility of extracted patterns.

Conclusion

This study elucidated the learning process of a concept of a web based learning environment system for diagnostic problems and methods involved in. This study could be help to the expert system developers in order to make their products faster and more attractive. This study discussed web based environment and involvement of knowledge mining towards learning and teaching, basic requirement of web based learning. Companies that offer specialist advice or recommendations in any field to the large number of customers can, on the basis of this study, make their advisory or recommendation systems more attractive and payable. Theoretical results of this study could also lead to exploring new ways of knowledge representation.

REFERENCE