International Journal of Engineering Applied Sciences and Technology, 2017
Vol. 2, Issue 7, ISSN No. 2455-2143, Pages 44-46
Published Online in IJEAST (http://www.ijeast.com)

LOGICAL IMPACT OF DATA MINING THROUGHOUT STANDARDIZATION IN E-LEARNING

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Abstract: Data mining is significant during Standardization in E-learning when we are collecting online data especially the contents for e-learner. Data mining will help in adhering to quality and ensuring consistency in contents, which will successively create effective learning contents which later turns into standardized E-learning [2] contents.

Presently there is a raising concern in data mining while making of E-learning contents. Educational data mining develop as a modern arising research community. It converts traditional educational systems into particular web-based educational system, well-known online learning or E-learning systems [4], and adaptive and intelligent web-based future based educational systems. Data mining techniques [7] can be applied such as statistics and visualization, clustering, pattern or association rule mining [10] and text mining on each stage during collection of online contents. Therefore to achieve the goal of standardization in E-learning in every stage of data collection we need to implement data mining in appropriate manner only thus we are able to develop a productive education system which helps in grow and development of e-Learner.

Keywords: **Data mining, E-learning, Educational Data Mining, standardization in E-learning, Use of Data Mining, e-Learner.**

I. INTRODUCTION

The excogitation and execution of E-learning system has risen exponentially in the last few years, due to today scenario e-learner not bound to a particular location and that this form of computer-based online education which is virtually independent of any specific traditional platforms. These systems collect a huge amount of useful information which is very valuable in examining Learner's behavior and to assist developer in detecting possible erroneous, defects and improvements. Use of main objective of data mining [4][6][7] is to identify useful data from the huge data and deliver to the learner. Researchers still are working on various data mining methods to help in improvement of E-learning systems. I hope in future we are able to find out best suitable methods of data mining[4] to implement standardized E-learning system for all [1]. Using data mining we can organize data in a very well manner, therefore it helps everyone to find out data according to their need.

Data mining [6][13] in education is the process of converting raw data from educational systems to useful information that can be used by educational software Developers, teachers, students, parents, and other educational researchers.

Today there is a raising interest in data mining and educational systems, making educational data mining as a new growing research community.

Data mining "is a process that uses statistical, mathematical, artificial intelligence and machine learning techniques to extract and identify useful information and subsequent knowledge from large databases"[9].

Data Mining can be used to extract knowledge from E-learning systems through the analysis of the information available in the form of data generated by their users. In this case, the main objective becomes finding the patterns of system usage by teachers and students and, perhaps most importantly, discovering the students' learning behavior patterns [8].

The application of data mining in E-learning systems: can help to resolve different problems using different data mining techniques.

Data mining can be used to resolve classification problems in E-learning. Only a few data mining techniques [9] can be applied to E-learning to resolve classification problem. The techniques are: fuzzy logic methods; artificial neural networks and evolutionary computation, graphs and trees; association rules [10]; multi-agent and systems. Furthermore, application of data mining to resolve clustering problems in E-learning; includes artificial neural network and clustering.

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Other data-mining techniques that can be used in E-learning are prediction techniques, visualization techniques, and case-based reasoning.

II. IMPACT OF DATA MINING METHODS IN E-LEARNING

The common procedure of educational data mining contains of four steps needs to apply: Collecting raw data, data Pre-processing, Applying data mining[7] and evaluate the results. After data collection and preprocessing steps we need to implement data mining techniques [6] which is depend upon the valuable E-learning contents therefore data mining role is most important. It helps to monitor and analyze the learner behavior and each activity in depth. Data mining also provides the facility of On-Line Analytical Processing (OLAP) tools in e-learning which is getting more effective in coming time. [19].

III. SIGNIFICANCE OF DATA MINING IN E-LEARNING PROCESSES

Data mining is defined as determine the existence, presence, or fact of hidden knowledge, samples and rules inside large databases [7]. Further analysis of data mining it discover the best results from use of statistics, expert systems, machine learning, AI (artificial intelligence) and database management. The main motive of data mining is processing on collected fresh data that can have significant use in future. Today Data mining process with the help of scientific tools providing better result from already processed data and discovering rightful information for the modern e-learner.

IV. ROLE OF DATA MINING TECHNIQUES IN E-LEARNING:

This paper provides role of the current state of Data Mining methods used in E-learning research and applications. E-learning taking place a new way of learning in today's busy life, although some leading educational organization paying attention to this new field. In order to Data Mining practitioner point of view, resultant E-learning data depend upon the type of modeling techniques [6] used, which include: Clustering, Genetic Algorithms, Visualization Methods, Neural Networks, and Intelligent agents, Fuzzy Logic, and Inductive Reasoning, etc. And at the end, according to E-learning practitioner, it provide a taxonomy of E-learning problems to which Data Mining methods have been applied to automate the construction and induction of e-learner models, as well as the background knowledge necessary for e-learner modeling.

Fuzzy logic-based methods have only recently taken their first steps in the E-learning

Field it is used to measure and transform the interaction between the student and the ITS (intelligent tutoring system) also to deal with E-learning use of Artificial Neural Networks and Evolutionary Computation models come into existent. To implement standardization in E-learning Data Mining techniques such as Association Rule mining [10] to extract useful patterns that might help educators, online content managers, and online content developer to evaluate and interpret online course activities. A multi-agent recommendation system, called InLix, was described, it suggests educational resources to students in a mobile learning platform.

V. INFLUENCE OF DATA MINING [15] THROUGHOUT IN ELEARNING STANDARDIZATION:

This paper explores the influence of data mining approach [9] at each stage of collection of e-learning contents. It is organized as follows;

1. Collection of Raw Data
2. Introduces preprocessing techniques
3. Collection of Educational Contents
4. Post processing
5. ELearning contents
6. Recommendation of additional data.

Data mining techniques discover e-learning contents. The application of data mining in educational systems is an iterative cycle of hypothesis formation, testing, and refinement (see Fig. 1).

Data mining helps in collection of educational contents from raw data which should prior enter the loop of the system, facilitate and enhance educational contents after applying preprocessing data mining techniques.

Not only turning raw data into educational contents, but also filtering the e-Learning contents after using post processing data mining techniques and keep collecting data after recommendation according to e-learner requirement such it is responsible for designing, planning, building and maintaining the entire E-learning systems. Different data mining techniques can be enforced at different stage in order to discover utile knowledge that helps to improve the E-learning process. The discovered E-learning contents depend upon educator, developer, Learner's behavior which can be understandable by only with the help of data mining techniques.

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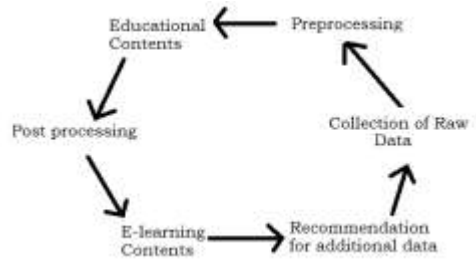

Fig. 1

So, data mining techniques helps in E-learning systems can be oriented to different actors such as

1. **Data Mining helps to students:**

(a) Automate learners' activities which help to learner while searching online useful contents according to their requirement.

2. **Data Mining helps to educators**:

(a) To get more valuable feedback for further improvement in online contents.

(b) To evaluate the structure of the online course content and its effectiveness.

(c) To find activities those are more effective and discover useful information and improve the adaptation and customization of the courses.

(d) To restructure course contents as per learner needs.

3. **Data mining helps to organization:**

(a) To measures, organize and update online resources and contents of the organization.

(b) To enhance effectiveness of the new approach for distance learning in organization [4].

VI. CONCLUSION

Rapid changes in culture and philosophy influenced many organizations to start changing their educational medium. To collect a valuable contents for e-learner become intangible assets in every sector. Now many organizations and companies have developed methods of presenting information to e-learner in a very interactive manner, also these information provide high quality knowledge. This means, Data mining helps in communication with e-learner and collecting valuable contents for them. These days, web based systems are attempting to get into e-learner minds and solve out their patterns [8] of behavior. It is important to maintain balance between educational material and learning methods to students, so they can prevail quality knowledge and be able to achieve to their goal. Thus various data mining techniques can help in process of E-learning. Their use has been growing in recent years, which shows their significance for standardization in E-learning. EDM can help each and every stage of e-learner and educators and it also helps in self-improving activities [11]. Data mining's an upcoming field relates to several well-established areas of research including E-learning, adaptive hypermedia, intelligent tutoring systems, web mining, data mining, etc. The application of data mining in educational systems has specific requirements not present in other domains, mainly the need to take into account pedagogical aspects of the learner and the system.

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