

E-learning: Mode to Improve the Quality of Educational System

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Abstract Data mining plays a very important role in uncovering unseen information from large volumes of data. Educational data mining (EDM) is a specific data mining field applied in discovering invisible knowledge from the educational database. In EDM, e-learning environment is an important field to learn the context of learning environments. The intend of the research paper is to look up into the current trends in the e-learning environment. This paper mainly focuses, in understanding the research done and current trends in e-learning environment. This paper reports, how the previous scholars tackled the earlier/recent trends in e-learning research. This work makes use of Harzing's Publish software for analyzing and visualizing the conduct level of the research papers. This study utilizes cites space, for analyzing tendency in e-learning research and to summarize the learning model and design for educational technology system appropriately.

1 Introduction

Data mining (DM), is frequently called knowledge discovery in database (KDD). Data mining is a computer-based information system devoted for generating information and discover knowledge [1]. Educational data mining (EDM) methods belong to an assortment of learning and teaching experiences [2].

Educational data mining can be applied to discover patterns in data sets to automate the decision-making process of Instructors, students and administrators. Apply an e-learning in the educational process improves the excellence of practical

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training and provides an enhanced understanding of the educational system [1]. E-learning was formerly meant supporting a system for distance learning and technology based learning. This is why e-learning is now often called distance education learning. Distance education learning is based on a remote communication between students and teachers. The meaning of e-learning is evidently stated that, learning through electronic system provides abundant changes in the education system. Owing to accelerate scientific progress, the present learning system has seen abundant changes in the information and communication technology.

Researchers as well as academicians, institutors involved in e-learning research have a stable and very important effect in their field's development. E-learning is delivered via digital devices (such as a Personal Computer, laptop, tablet, or smart phones) that are deliberate to support e-learning. E-learning courses contain both content (information) and instructional methods (techniques) that helps people to gain knowledge of their course material. The forms of e-learning have the following features:

- Using an electronic devices store and transmit the course materials.
- Includes content and techniques to the learning objectives.
- Make use of media elements such as (animation, graphics, text, audio, and video materials).
- Make use of instructional methods such as examples, practice, assessment, and feedback to promote learning techniques.
- Helps learners to discover new knowledge and skills.

Three Metaphors for learning:

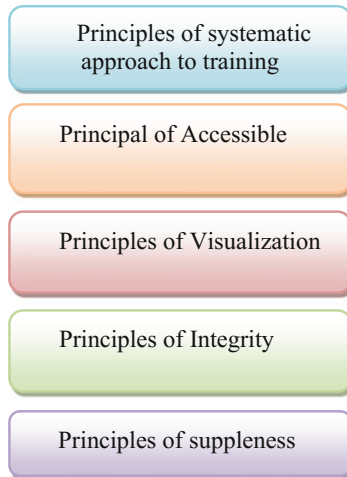
1. Learning implies accumulate the knowledge.
2. Learning implies adding information accession.
3. Learning implies making sense of knowledge creation.

1.1 The Principle of the Research

- The goal of this study is to find out the how the previous researches tackled the existing trends in the e-learning environment.
- This study utilized Cite Space, analyzing a citation of a paper using Harzing's publishes software.
- Discussion of existing research and some trend for future research are recommended.

1.2 Discussion in Previous Work

The e-learning background has such characteristics as flexibility, integrity, unrestricted space for communication and asynchronous use. EFL teaching in the e-learning environment came to the conclusion that, number of pedagogical principles act in new ways [3]. E-learning environment with EFL teaching is to create the conditions for independent work of students on extraction, processing, analysis, and structuring of educational information.



Classic systems for e-learning system use on devices with huge screen and high resolution systems; they most properly used in web environments. Internet browsers are very sufficient for use in the following operating system Mac OS, Windows, and Linux.

In e-learning system, students and teachers will implement collaborative teams in this system. The basic technique in collaborative learning is to solve the problems and converse with various roles. The teachers are instructors, observer, and academicians, while students are users, actors in a collaborative learning system [4] (Fig. 1).

The new generation of students in the twenty-first century is developing different intellectual styles is compared to the previous generation. The new intellectual styles are offering the learners to participate in the creation of new knowledge as a normal part of their knowledge society [5]. Students' learning styles were statically considerable for knowledge discovery (Table 1).

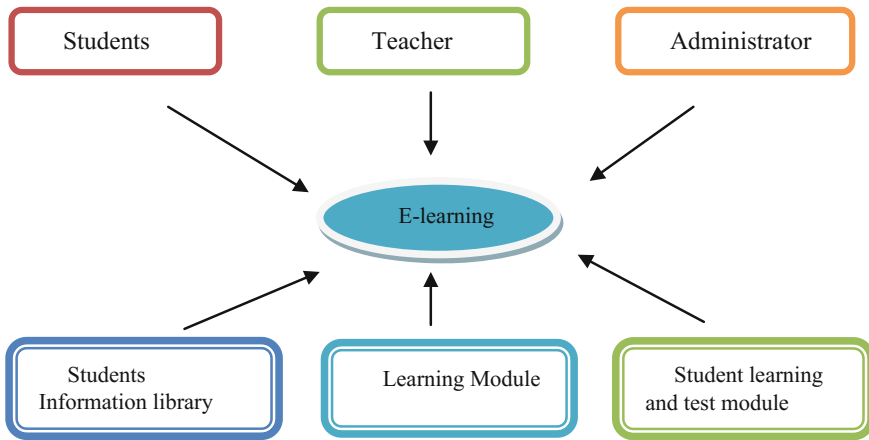


Fig. 1 Structure of e-learning system

Table 1 New intellectual styles in e-learning environment

New intellectual styles	Old intellectual styles
Random access	Step by step access
Identify student’s learning style	Identify education system
Detect student’s engaged concentration	Evaluate course work
Predict task completion	Estimate task completion
Technology as friend	Technology as foe
Graphics and animation	Text
Parallel processing	Linear processing
Fantastical design	Reality
Play and work situations	Work situation
Connected	Standalone

2 Architectural Design for Educational Technology System

A system architecture represents the interaction between the user and the system, learning through equipment via digital devices such as Animation, podcasts, video, images, PowerPoint Presentation, etc. An e-learning design shows importance to improving classroom-based teaching. An e-learning environment has uniqueness such as suppleness, integrity, unrestricted space for communication [14]. And it has the ability to represent the teaching information in the form of animation, blogs, text, audio, video, podcast, graphics, etc. (Fig. 2).

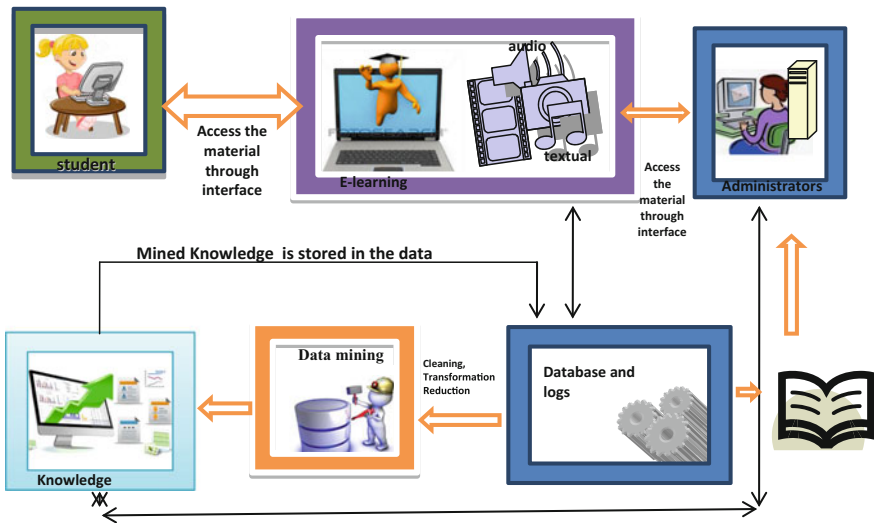


Fig. 2 System architecture for representing the interaction between the user and the system

3 Discussion on Selected Papers

This section mainly focus on how some of the earlier research scholars tackled the e-learning system from the year 2014 to 2016 as stated in Table 2. Conduct level of the research field are analyzed and visualized using a Harzing’s publishes software as stated in Table 2. The number of citations that each paper received is affirmed in the table and also indicates the impact they make toward e-learning researchers and the field itself [14]. The main objectives, Platform, data mining model, and data mining tasks that each study carries are mentioned in Table 2.

4 Conclusion

Most of the academicians and researchers in Educational Data Mining (EDM) pay special attention towards the make use of e-learning system. After analyzing the techniques and methods, the introduction of new communication technologies, examined their peculiarities and formulated a better idea than the existing system. Data mining in an e-learning system favorably adapt students who needs sufficient knowledge as well as analyzing students who have faced difficulties in acquiring new knowledge. Data mining provides a wide range of solution to the students and evaluating the final score between a student’s activity in the system and their assessment [15]. Using a Harzing’s Publish software, analyzed and visualized the conduct level of the research field. This study utilized cites space for analyzing tendency in e-learning research.

Table 2 Insight into earlier research work in e-learning

References	Main objectives	Platform	Data mining model	Data mining tasks	Name of the publication	Number of citations
[6]	Reinforcing social media based learning, knowledge acquisition and learning evaluation	Collaborative and interactive	Prediction	Sequential pattern	Procedia—social and behavioral sciences 228 (2016)	0
[5]	Integration of web 2.0/web 3.0; tools with e-learning for knowledge society	E-learning	Prediction	Sequential pattern	Procedia computer science 92 (2016)	0
[7]	Construction of massive open online course (MOOC) based blend learning mode	Tradition/e-learning	Description	Classification	International conference on computer science and education (2015)	0
[2]	Implementing a contemporary blended learning model within the e-course	ELARS system	Description/prediction	Classification, clustering, analysis	IEEE transactions on education, vol. 59, no. 1, February 2016	2
[8]	Mining of computer game assisted e/m-learning systems in higher education	Computer game-based learning	Regression	Pattern evaluation	MIPRO 2014, 26–30 May 2014	1
[9]	Social recommender system for predicting the needs of students/instructors	E-learning	Prediction	Classification, sequential pattern mining	International conference on future internet of things and cloud (2014)	2
[10]	E-learning system based on learner's feedback and learner's multiple intelligences	E-learning	Prediction	Fuzzy item response theory	Programming and Systems (ISPS), IEEE, 2015	0
[11]	Analyzing the design of e-learning system	Designing an e-learning system	Prediction	Classification, statistical	International conference on information and communication technology	0

(continued)

Table 2 (continued)

References	Main objectives	Platform	Data mining model	Data mining tasks	Name of the publication	Number of citations
[12]	Automated formative assessment model for learning and teaching methods	E-learning	Prediction	Classification, association	Procedia—social and behavioral sciences 228 (2016)	0
[13]	Live migration destination selecting method for an e-learning environment	E-learning environment, disaster recovery	Description/prediction	Association classification, clustering, analysis	IEEE big data computing (2016)	1

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