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Learning How to Learn Using Multimedia

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Introduction

The quixotic educational philosophy revolving around 'learning to learn' has stimulated considerable debates in both theoretical and practical fields of education being a very strident and accountable process to develop reading, comprehension, expression, curriculum, instruction and assessment. Relatively, the principle inherent in comprehending various processes of learning styles and strategies on the basis of learners' autonomy has become equally important for the teachers and the learners as well. Research shows that the learning strategies of our learners today display puny extension in some essential skills like note-taking, note-making, idea organizing, etc., resulting in abysmal performance. The theory of experiential learning according to Kolb has its intellectual origins in Dewey's philosophical pragmatism, Lewin's social psychology and Piaget's cognitive developmental genetic epistemology [David, 1984]. However, the last decade's surge in the study of learning styles and strategies lending for cognitive strategies has retained enormous discretionary power that eventually led to a ray of positive hope in the fairness of the education system. The ultimate intention of making aware of the learning styles and strategies is to enable students to encounter the problems they face both academically and non-academically.

Hence, the exposition of the special individual potentiality is the key factor demanding a serious, substantive, contextual and conducive atmosphere. The pedagogic perception of language as skill, as a matter of socialization, is no more a matter of fact memorizing or information collecting from various sources, rather an understanding of the learners' characteristics congruously. A system of burdened and impulsive education without learner's own interest, style and plan doesn't awaken the mind and the dormant intelligence in it but stuffs it mechanically creating some chaos and conflicts hemorrhaging the talent. It is a common acceptance that different learners have different attitudes to learning for their individual differences. Moreover, these differences determine their responses to different teaching methods and techniques and those shouldn't be unheeded. These differences include a learner's motivation, personality, language level, learning style, learning strategies and age and past language experiences. (TKT course [Spratt, 2011]. The discussions of learning styles, strategies, practical implementations, teachers' role and the current findings is the theory of learning style as debunk, comparison of styles and strategies.

Computer technology and multimedia have long been used in classes in the field of education. It was usually used by faculties of engineering and science because of its benefits. A series of studies conducted have analysed that using digital methodology of teaching can make a class much more interesting compared to the traditional methodology. There are so many learners with so many diversities and needs, e-learning could be one of the innovative techniques to impart education to the, It is not to be considered that only students need to study through e-learning, rather the teachers too need this technology to impart education which sums up that e-learning is an important technique for the students as well as teachers. Sometimes when a teacher needs to take a class through distance mode, he or she could easily conduct classes through a digital classroom.

The concept of education imparting has undergone sea changes. It is no longer restricted to classroom teaching where a teacher would come to the class and give lecture on a topic by using a chalkboard for giving illustrations. With the advancement of technology, a new methodology has started to develop and students have been using them quite conveniently. The internet has been responsible for generating a new trend of education through various mediums like computerized electronic learning, online learning and internet learning. The courses are delivered online through the internet in order to facilitate the learners. they get an environment which is unconventional that makes learning more easier and comfortable. This course cannot be imparted through a CD or a DVD player. One of the approaches is e-learning where learning does not involve showing something on a DVD or a CD, but on the other hand, the sessions that are delivered online are much more interactive and a student is able to communicate with the professor who is delivering the class, with another student who is also a learner and from the other place in the world. The sessions can be delivered live where a participant can raise questions through clicking the button and get the query answered whereas in some cases, lectures are pre-recorded and shown to the students. But at the same time, a coordinator would be there who would be handling the sessions who is a professor or a faculty. He or She would be interacting with the participants and evaluating the performance. verify assignments and conducting tests. This methodology of imparting education through e-learning is evolving as a growing mode which imparts education and has succeeded in becoming the most sought after method for many young learners. Fletcher and Kulik have re-emphasized that a student can grasp more while giving education through technology-based learning instead of conventional methodology [Kulik, 1994]. Brandon Hall has tried to explain that accessing knowledge which is imparted through digital mode is more informative and more intellectual in nature, The processes are new and innovative [Hall, 2001]. A variety of subjects could be possible through digital mode like English literature, Language, History Science to name a few. It is a well-known fact that learners who are children and learners who are adults do not have same choices in methodology and requirement that is used in teaching. For instance, if there is any attempt to summarize a text, adult learners are expected to be more curious to understand the logic behind performing the activity, while a young learner would perform without asking any question. Adult learners are more practical in nature therefore they use to solve a problem through application

by accessing their real-life experience and using it in their learning methodology, while a young learner is sensitive, not experienced and hence uses theoretical mode while solving problems. For adults, there is a relationship between trial and error and levels of satisfaction during the learning process which affects their ability to maintain ongoing levels of motivation.

Therefore, this volume has vast resources of research outcome of academicians, researchers that are related to e-learning and teaching and learning through multimedia. Apart from these topics, it also contains topics related to copyrights, teaching artefacts and teaching through social media. It is expected to be an attempt to start with an introduction of the concept of multimedia, and how multimedia technology could be implemented to impart digital education to university students.

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Contents

E-Learning Artifacts and Their Impingement on the Learning Management System

Sandhya Satyarthi, Dhirendra Pandey, Virendra Singh, and Vandana Dubey

Abstract Technology can transform the traditional education system into an improved education system for that e-learning acts as a mediator to link and provide education to various learners of any age group either a child or adult, anytime and anywhere all over the world. E-learning is a combination of content and instructional methods on a computer intended to outline knowledge and skills to the individual for achieving learning goals and organizational performance. The development of computational technologies plays a vigorous role in modern learning which primarily contemplates the use of information technology and communication (ICT) to the management of both teaching and learning activities and provides a medium to adapt and accelerate the existing learning management system. Learning Management System (LMS) is capable of organizing, delivering, managing, and tracking the learning contents and also monitoring the learning activities performed for better interaction and effective e-learning. In this chapter, we will discuss the impact of learning artifacts and also the factors that influence the proficiency of e-learning for both individual and the organization.

Keywords Learning Management System (LMS) · E-learning · Artifacts · Information Technology and Communication (ICT) · Teaching · Learning activities

1 Introduction

The immediate elevation of Information Technology and Communication (ICT) infrastructures in various educational organizations relies on making use of the Internet as an interacting medium for the students, teachers, and organizations to

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provide better learning and teaching practices (El-Seoud et. al., 2014). An interesting and collaborative learning environment created using multimedia, computerassisted instruction, the internet, and other technologies for the students to interact and improve the excellence of the teaching and learning system. The importance of e-learning increases as it enhances the access to learning materials, the concepts, and the methodologies of technology-based learning more efficiently (Waterhouse, 2005). There are many evolving opportunities in the field of e-learning that aims to improve the experience of learning and endorsing higher-order thinking skills and practices to optimize learning outcomes as well as promise high-quality learning design and instruction. E-learning provides a platform for learners to improve their ability to practice and understand logic anywhere anytime and also allows learners to a spontaneous understanding of intellectual knowledge.

Learning Management system (LMS) assists the organization to deliver and track the learning content provided, course enrolment, subject knowledge, course schedules, small quiz, test, and self-assessment, encouraging students for more collaborative tasks and activities to evaluate the efficiency of the computer-assisted instruction learning and improving the student interest toward learning. The functions of LMS depend on the objectives of a particular organization that means it may be different for others as the requirements vary from person to person and organization to organization. LMS facilitates online training and learning initiatives for remote learners to easily access the information and relevant data regarding their study or a particular subject through e-learning tools anywhere. LMS allows the student to sight online lectures, communicate with educators, and interact with each other in study-related groups, download and access course work, online quizzes, putting queries, submit assignments, and classwork. The content was updated and upgraded for various mobile and computational devices to smoothly run the processes and improving the interaction among learners and teachers to communicate with each other without any interruption.

In Sect. 1 of the chapter, we go through the literature survey to have a deep insight into the topic by exploring various author researches and their views. In Sect. 2, we will focus on the artifacts and factors that influence the e-learning process management in detail, and moving further we focus on main areas that can impact the learning management system from the learner's perspective; then in Sect. 3, we conclude our study and analysis on artifacts that are discussed also suggesting further enhancements needed in the e-learning management system and implementation.

2   Literature Study

E-learning facilitates information and knowledge by the approach of global connectivity, and it can be used as an effective resource for implementing knowledge-based systems. A lot of authors define various factors and their researches in the field of e-learning system management to enhance traditional learning and availability of learning resources to everyone.

In 2020, the authors Jaroslav Kacetla et al. have written a paper on "Reflection on blended learning and e-learning—case study" that describes the research results that show how the roles of both educator and learner may transform by e-learning as it is more fascinating than usual learning process and it also improves the transparency of instructions as well as course reliability and also individualization of the learning practices and feedback (Kacetla & Semradova, 2020).

In 2019, the authors Mayleen Dorcas B. Castro et al. have written the paper on "literature review: efficacy of online learning courses for higher education institution using meta-analysis" which defines the significance of instructional design and the vigorous role of institutions by providing support to the structures for educators and students and also to designing and developing Online Learning Courses using the ADDIE framework by identification of various processes and activities (Castro & Tumibay, 2019).

In 2017, the authors Tasha Maddison, C. Doi et al. published a paper that concluded that online instruction delivery in specific teaching and active learning techniques are used to sustain student engagement with the learning and material provided can improve their understanding of the facts and preserving the vital information for future perspective (Maddison et al., 2017).

In 2016, the authors Mousazadeh Somayeh et al. have written a literature review on the topic: 'The effectiveness of E-learning in learning: A review of the literature" that describes the results of studies suggested that inspiring effects of e-learning on education by improving interaction and building the required grounds for students to improve their understanding and learning outcomes.

In 2013, the author Nor AzuraAdzharuddin has written an article on "Learning Management System (LMS) among University Students: Does It Work?" which gives insights into Learning Management System (LMS) various impacts and implementation on the traditional learning approaches.

In 2012, the author Lori S. Mestre wrote a paper on "Student preference for tutorial design: a usability study", this paper provides a comprehensive list of best practices for online tutorials based on a well-designed usability study to analyze its impact on student preferences and learning that includes the use of multimedia in an appropriate manner to improve learning practices, information, and chunks transfer (Mestre, 2012).

Learning management systems are extremely influenced by learning approaches and teaching–learning practices. In the study, we concluded that an enhancement in the e-learning management system artifacts can improve the learning activities and learning outcome. As we did a brief analysis of artifacts and factors of e-learning because learning artifacts are basic building blocks for LMS to focus on how effective learning will be achieved. So, it is important to focus on these artifacts to increase the efficiency of the LMS and learners' interest toward their regarding course or subject.

3   Artifacts of E-learning

Artifacts can be understood as human-made objects, tools, or activity especially with a vision to subsequent use to define the character of the process or a product. In the perspective of the learning management system, the artifacts may consist of teacher plans, learning tools, or learning elements and teaching practices. However, factors are features or elements contributing to the consequence of a particular process or situation.

A variety of e-learning platforms are developed to improve the student interaction and interest in learning and understanding of the subject for efficient e-learning management; we will briefly discuss the artifacts and the factors that affect e-learning. The analysis is based on examining the literature survey to map out factors related to the e-Learning practices and methodologies for the effectiveness of E-Learning (Noesgaard & Ørngreen, 2015). Figure 1 shows the various factors and artifacts of e-learning that have a huge impact on improving the e-learning environment.

3.1   Perception of Learning

Perception is the ability of the sensory systems to respond to stimuli and also a process by which we receive and interpret information from our surroundings. It is a critical part of understanding behavior through the experience and sensory interaction with the environments or practicing specific sensory tasks. In terms of e-learning perception of using things in early stages and understand things is very crucial because perception about LMS, e-learning tools, access tools makes learning more effective to the learners.

3.2   Learners Characteristics

Learners' characteristics are essential to building a dynamic learning environment for the user to create and interact with technology and surroundings in a collaborative manner. The learner is capable to understand the value of creativity, adapting changes, collaboration, and utilization of organization skills to enhance learning and critical thinking. For effective online learning and understanding, a learner is enthusiastic and capable of effectively communicating with others using a variety of media and technology.
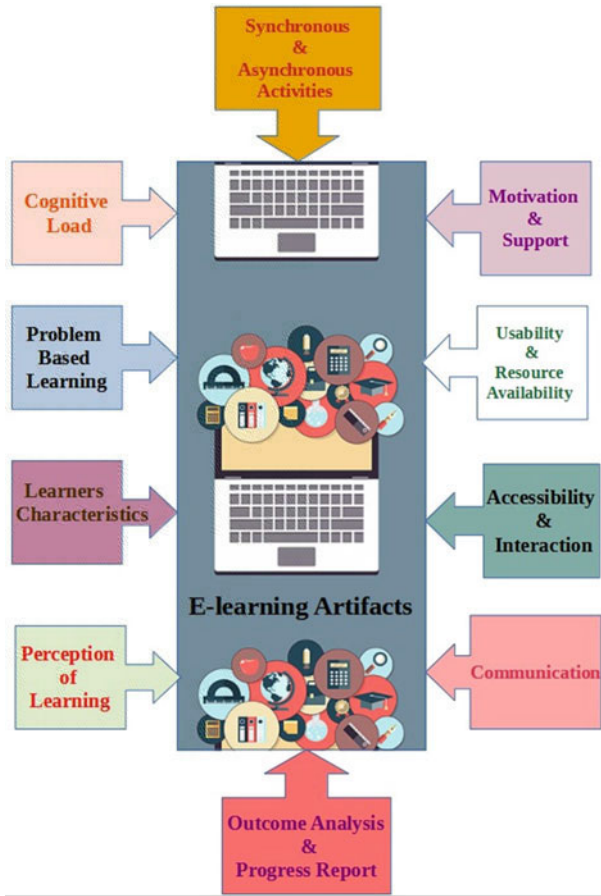
Fig. 1 E-Learning artifacts

3.3 Synchronous and Asynchronous Learning

Synchronous learning is real-time-based learning like online, digital, or distance learning that has schedules, instructions, and login time. In synchronous learning, the learner and educator both present at the same time in the same medium to be connected and interact efficiently, students usually go through the instructions accompanied by their instructors or teachers who are capable to provide support while students are completing tasks and activities like live classes, small group meetings, etc. Besides this asynchronous, learning is student-centered and needs no real-time interaction. The content is available online for learners, so they can access it anytime. But some deadlines for the submission of assignments and tasks are given by the instructors. The balance between synchronous and asynchronous learning is important to make e-learning more operational and useful.

3.4   Problem-Based Learning

Problem-based Learning is an effective approach to conveying education in a lucid and integrated manner that provides numerous advantages over traditional teaching-learning strategies. In PBL, learners or group of learners uses the problem instance or issues to analyze and illustrate their learning objectives to increase knowledge and understanding about particular problem or subject. For an interactive learning management system, problem-based learning is very important as it keeps learners critically engaged in finding the solutions to a given problem or task that makes them more creative and develop some skills like a critical evaluation of problems, knowledge application, self-directed learning, resources usability, and collaborative learning.

3.5   Communication

E-learning often has the challenge of mostly one-way communication, so it is essential to construct the right tools in the sequence to ensure the learner is learning and has sufficient prospects for a response. For any collaborative learning or teaching activity, communication is the basis to stay connected and interact with each other to discuss some real-time problems and solutions, providing content and then communicating them in a way that the learner understands and eventually capable to apply that knowledge. Communication plays a crucial role in engaging learners with some critical and meaningful tasks and learners able to give feedback in a manner to improve the learning management system.

3.6   Cognitive Load

It is a scientific approach to design the human brain to process and store information. According to various authors, the human brain is functioned by two types of memories: the first one is working memory and another one is long-term memory. Working memory is a cognitive power that has dedicated to rapid perceptual, and linguistic processing has limited capacity. After additional processing, the information is discarded or stored in long-term memory. However, in long-term memory information is stored in the form of schemas. Working memory responds to information through sensory memory and then stores it in long-term memory, the schemas organize this information according to how you use it and also help in understanding the scenario based on this stored information. For better processing of the brain, it is important to do some strategic practices, using some interactive media and taking some small break sessions. The e-learning experiences in the learning management

system are should be designed to reduce cognitive load and providing a better understanding that must be helped in improving learning outcomes and indorse schema acquisition (Vanitha et. al., 2019).

3.7 Accessibility and Interaction

Accessibility means making content, applications, and platforms serviceable to people of all abilities and disabilities employing making it easier for them to recognize, understand, navigate, interact, and contribute to the information and functionality that need from an e-learning platform. This might include someone with old computer hardware, any operating system, a device with a slow internet connection, or a person of any age (child, adult, or old) who can access the information. The e-learning course material and the e-learning platform ought to be manageable to be operative and also accessible; various tools are used to evaluate how successful they have been in helping teachers in education and training by providing e-content, practices, and online training. Although an interaction is often promoted as a noteworthy component of successful online learning, Learner-instructor interaction refers to exchanges of information and responses between learners and the teacher in a way to motivate and develop the interest of the learner toward that particular subject or course. E-learning management tools also provide a mechanism for feedback allowing clarification of misunderstandings. Interaction in online learning platforms allows students to share their thoughts and information on various subjects with each other and with an educator that typically motivate deeper understanding and interest in course concepts.

3.8 Usability and Resource Availability in e-Learning

Usability is an elementary constraint for the assessment of e-learning management systems and technologies. Usability means placing the users and their real needs as the main objective with quality improvement. Therefore examination of usability and its contribution to the learning management process is valuable. The major dimensions of usability are effectiveness, efficiency, and satisfaction of users or learners. The effectiveness can be measured in terms of the ability to achieving specific goals and efficient use of the available resources to provide user satisfaction and improved learning outcomes. The availability of technological resources is an important element of an arrangement of online learning, e-content, and digital libraries' accessibility. It is important to assure that the available educational resources meet standards of quality, reliability, and accuracy, and also they are capable of running on any platform, on any device, anywhere, and for anyone (also students with disabilities). Resource availability plays a vital role in the method of e-learning as it is important for leaner's to have devices, connectivity to reach the information they

want to access. The variety of online learning resources (learning content and learning tools) facilitates learners to build a learning environment that is most suitable for their personal learning needs and preferences.

3.9 *Outcome Analysis and Progress Report*

A learning outcome is a quite broad testimonial of the overall intended result of an educational program that displays student or learner results according to standards, objectives, and outcomes that are important for the curriculum. The report provides a summary and drill-down features, for easy browsing of assessment data. The educational institute or course provider identifies learning outcomes as the expected outcomes from a learner that provides evidence for improvement analysis on results. A progress report is maintained based on the participation of the learner in particular from starting to the end and considering the exam results via interview, questionnaire, exam to test the capability of a learner to grasp the knowledge, and understanding of a particular subject or course at the end and also to ensure the areas or subjects where more efforts and training needed to improve results and understanding of the subject.

3.9.1 **Motivation and Support**

Motivation in process of learning makes the learner more encouraged and enthusiastic about the goals; motivated learners are more capable of undertaking any challenges, facing hurdles, and adopting technical changes in a very proficient manner. Thus, we can say motivation enhance learners to actively participate in critical learning activities and adopt a deep approach to learning and exhibit enhanced performance, dedication, and creativity. To develop motivation in the teaching-learning process, the organization must design the course content by using a range of educational strategies to acknowledge the complexity and variety of learning methods of education to the learners (Wheeler, 2012). However, the assessments provided to learners in analyzing their active participation and increased performance.

The need for technical support and assessment in learning management systems is important in the earlier stages of studies so it is essential to develop an environment that assists students to learn "how to learn" (zheng et. al., 2015). They understand and continuously approach better performance by supporting the technologies provided by the organization or e-learning platform. This is the responsibility of the LMS tools to support and facilitate learner needs to make learning more interactive and effective.

4   Conclusion

As we are moving toward a new way of the digitalized learning environment to make education accessible and useful for people of any age, anytime, and anywhere. E-learning is recognized as an automated network that assists the transmission of technical skills and knowledge and distributes education to a large number of receivers at the same or different intervals in a variety of environments and tracking the performance. The consequence of this interpretation of e-learning is a challenge that we are not able to use it as effectively as it should be for more developments and improvements Therefore, for more appropriate use of the e-learning management system, we must know about the artifacts and factors that influence the learning process more operational for better understanding and implementation of various strategies of e-learning to providing access to learners and teachers. Hence, for collaborative interaction, it is important to focus on the basic factors to accelerate e-learning practices more persuasively.

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