The Effectiveness of Knowledge Combination in E-Learning Management System (eLMS)

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Abstract—Information and Communication Technology (ICT) play an important role in maintaining Knowledge Management (KM) processes, because of the potential significance of knowledge management in improving the performance of higher educational institutes in particular. KM is acquiring increased relevance as a topic worth exploring. e-Learning Management System (eLMS) has been recognized and known as effective and powerful in supporting teaching and learning opportunities around the world as well as being a method of delivering education, knowledge and flexibility to higher education institutions, eLMS has been a significant step forward in the evolution of knowledge management systems.Thus, the purpose of this empirical study was to see how effective knowledge combination in eLMS is among Iraqi students. A survey research approach was adopted to achieve these goals, with a sample of 109 undergraduate students from Iraq's College of Information Technology, all of whom were actively participating in eLMS activities. The initial result showed that the knowledge can be productively transferred from teachers and lecturers to students via eLMS. Furthermore, eLMS enable students to increase their knowledge through the combination process, also students are able to integrate and use multiple knowledge sources to enhance their learning process.

Keywords—Knowledge management (KM), combination, explicit knowledge, tacit knowledge, e-Learning Management System (eLMS)

1 Introduction

Knowledge management processes such as knowledge collection, transfer, sharing and application are highly dependent on Information and Communication Technology (ICT)[1]. At present, Mobile communication devices, which are ICT products, have become a basic need in our daily lives since they provide a new approach of communication and collaboration [2].

Up to now, online education platforms have experienced rapid development as online learning and ubiquitous learning have become the prevalent forms of e-

learning strongly supported by teachers and favored by students. As a significant form of e-learning, e-Learning Management System (eLMS) has become a concern of many scholars and has been extensively researched in the area of educational technology [3,4].In higher education, in order to achieve the learning process, students need to acquire a set of innovation and thinking skills such as (collaboration, critical thinking, communication and creativity) if they wish to succeed in life and work [5].

eLMShas been recently recognized as powerful tool in supporting global learning opportunities and offers a method of delivering education, knowledge and flexibility to institutions of higher education [6]–[8].eLMS is a popular instrument that is increasingly being used to manage and support teaching and learning in higher education institutions[9] . [2] supports this finding, who found that the use of eLMS can help reduce barriers, interfere with learning, and make improvements in communication with colleagues and students.

Knowledge management (KM) has seen greater importance as a topic valuable for re-searching because of a possible role of knowledge management in assisting organizations in general and institutions of higher education in particular in achieving their goals [10,11]. As a result, KM is today regarded as the art of deploying knowledge assistance in any organizations worldwide by applying KM actions such as developing, sharing, collecting, and aggregating vital and valuable knowledge. [1].

2   Related works

2.1   Review of e-Learning Management System (eLMS)

Electronic learning (e-learning) is an application of information and communication technology that aims to improve access to resources that facilitate teaching and learning [12].A study by [13], described the eLMS as the acquisition of knowledge and skills using electronic technologies, like local area networks, WANs, and computer-based method. Consequently, in the educational field, eLMS has developed as a crucial support tool for creating an ICT-based learning environment [14].

E-learning plays an important role in education to enhance and improve students' skills as well as its importance in teaching students new ways to manage their information and knowledge [15].e-learning is a phrase that refers to learning using an eLMS and the Internet, which has enabled online learning and links eminent academics and learners at any time and location [16].

According to [6]research,academic institutions are increasingly using eLMS as an e-learning system / platform to let students and facilitators access educational materials and online services.[5], pointed out thattheeLMS are obviously important for innovation skills and thinking enhancement for higher education learners.

eLMS offering an online environment that facilitates the delivery of content and encourages cooperation and engagement both inside and outside the classroom, making learning and teaching more successful.as well as it also enables professors to design   and   edit   study   materials   for   their   students.   E-workbooks,   e-textbooks,educational films, and e-tests are examples of digital study materials.

2.2   Knowledge Management

Knowledge Management (KM) is a systematic approach to helping and assisting in the transfer, development, and application of knowledge and education across higher education institutions. [17].The concept of KM relates to any methods and procedures involving the application of knowledge, creating, acquiring, acquiring, exchanging, experience, and skills[18].

In higher education, knowledge management includes planning and creating organizational knowledge, sharing the knowledge with the appropriate people and groups, and making it easier to put that knowledge to work in order to achieve the institution's missions and objectives[19]**.**Furthermore, Knowledge management (KM) is a powerful tool for maximizing the value of intellectual capital, and it may be applied in higher education institutions as well[20].

2.3   Combination in eLMS

The combination process in eLMS is referring to the process of transferring explicit knowledge into more systematic and complex collections of explicit knowledge [21].Furthermore, the combination process refers to the process of gathering inconsistent explicit knowledge like external sources, educational material, or via an online system into a group of systematic and complex explicit knowledge [22].

According to [23], the combination process in eLMStransfer explicit knowledge to more complex systematic groups of explicit knowledge. Further, explicit knowledge is collected internally or externally to the organization and then integrated, editing or manipulating the shape of the new knowledge, which is then disseminated among the project members.

2.4   eLMS and Knowledge Management

Knowledge is commonly considered to be the most significant asset in any organization, and thus in the educational field[20], [24]. [25] pointed out that the use of e-learning within a KM strategy, it can be seen that e-learning can use to achieve the SECI model of knowledge transfer, as shown in the most commonly used model in KM.

In the development of knowledge management systems, e-learning is a critical step[26]. Study by[27]Point out some of the similarities between knowledge management and e-learning, explaining that both provide knowledge to users, although in different forms,so this content can be used for added, modified or reused as needed for different approaches. As well as they emphasised that the system architecture is almost same for the both concepts. For both platforms, It's crucial to give collaboration and communication tools like email, forms, and chat rooms, as well as other types of contact.

Most IHL provides an e-learning system to their learner in the form of forums in which they can connect and communicate with their colleagues electronically by exchanging experiences and discussing educational materials. These e-learning sys-

tems include scholarly and personal information about individual lecturers, such as their list of scholarly articles published, also the information on how to contactlike phone numbers, social media platforms, and email. Additionally, they offered a video library that include lectures made by individual lecturers.

eLMS consist of a set of functions that enable content creation and presentation, collaboration, communication, and evaluation. In addition to that, the system also provides different services like chat, assignments, forums, and online quizzes for both the use of students and lecturers.

3 Methodology

In this paper, a quantitative survey research design was adopted in order to understand the effectiveness of Knowledge Combination in eLMS. [28] pointed out thatsurvey research gives the possibility to determine the relationship between several factors.In the same context, Leedy and Ormrod[29], illustrated that a survey design is an appropriate method when the objective of the research is to determine the causal relationship between dependent and independent variables.

Therefore, the survey research design was suitable for the current study due to the relevant data can be obtained through a set of questionnaires developed by [22]that focus on how knowledge is transferred through the process of bringing together students. The study samples consisting of 109 undergraduate students studying at the College of Information Technology at a public university in Iraq.

Participants were given 12-item combination questionnaires to complete as part of the data collection for this study. All items tapped into an individual's perception, needed a response on a five-point Likert scale ranging from 1 to 5, with 1 indicating "Strongly Disagree" and 5 indicating "Strongly Agree".

4 Results and discussion

The survey of this research included 109 respondents, of whom 39 were male and 70 were female. The ages of the students ranged from 19 to 23 years old. The gathered data was analysed using Statistical Package for Social Science (SPSS). The reliability of the instruments was 0.852, which is accepted in reliability.

Table 1 shows the descriptive statistics for the components relating to the students' combination process, Indicates that the highest average score was obtained for Question 2: "I view updates of learning materials from time to time." (M = 4.05, SD = 1.141). Following that came Question 1: "I download learning materials every semester." (M = 3.93, SD = 1.365), those activities increase the knowledge combination due to the combination pointed to the process of gathering inconsistent explicit knowledge like educational material via an eLMS into a group of systematic and complex explicit knowledge.while the lowest average score was achieved by Question 7: "I surf the links of external sources for my references." (M =3.29, SD =1.383).

Table 1. Descriptive statistics

	Questions		Strongly Disagree	Disagree	Do not agree neither disagree	Agree	Strongly agree	Mean	Std. Deviation	Rank
1	I download learning materials every semester.	N	9	12	15	15	58	3.93	1.36563	2
		%	8.3%	11%	13.8%	13.8%	53.2%			
2	I view updates of learning materials from time to time.	N	4	9	17	27	52	4.05	1.14168	1
		%	3.7%	8.3%	15.6%	24.8%	47.7%			
3	I download learning materials from time to time.	N	18	13	24	22	32	3.34	1.43514	10
		%	16.5%	11.9%	22%	20.2%	29.4%			
4	I always check announcement from the lecturer.	N	10	7	23	16	53	3.87	1.33403	3
		%	9.2%	6.4%	21.1%	14.7%	48.6%			
5	Notes equipped with additional references help me understand the topic better	N	13	16	15	28	37	3.55	1.39766	7
		%	11.9%	14.7%	13.8%	25.7%	33.9%			
6	I can evaluate my performance using the online quiz.	N	16	10	28	26	29	3.39	1.36020	8
		%	14.7%	9.2%	25.7%	23.9%	26.6%			
7	I surf the links of external sources for my references.	N	17	13	28	23	28	3.29	1.38312	12
		%	15.6%	11.9%	25.7%	21.1%	25.7%			
8	I bookmark sites that I feel important for my reference.	N	17	11	14	19	48	3.64	1.50630	6
		%	15.6%	10.1%	12.8%	17.4%	44%			
9	The interfaces of e-learning system are easy to use.	N	9	11	23	28	38	3.69	1.27437	5
		%	8.3%	10.1%	21.1%	25.7%	34.9%			
10	The e-learning system helps to reduce time of learning.	N	7	10	25	18	49	3.84	1.27057	4
		%	6.4%	9.2%	22.9%	16.5%	45%			
11	I prefer to interact with the lecturer using e-learning system rather than face to face meeting.	N	18	19	21	10	41	3.34	1.52886	9
		%	16.5%	17.4%	19.3%	9.2%	37.6%			
12	I can continuously keep track my performance using online quiz.	N	28	13	25	21	22	2.96	1.47150	11
		%	25.7%	11.9%	22.9%	19.3%	20.2%			
Average Result								3.57	.68092	

Furthermore, after studying the results, it should be noted the total weighted average score was 3.57with SD= .680which means that **Agree** is the general trend according to the 5 - point Likert scale, since 3.57 lies in the 3.40–4.19interval. These results are depicted in Figure 1.
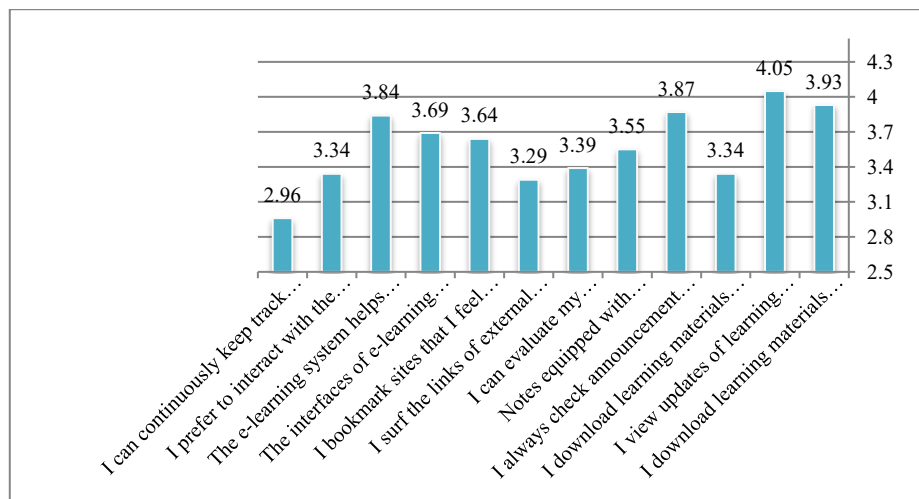
Fig. 1. The responses of sample respondents are about combination

This study illustrated that eLMS provides a significant platform for students and lecturers to connect, interact and cooperate with each other without the limitations that can imposed by place and time,in addition to the knowledge that can be transferred effectively from lecturers to students through the e-learning management system (eLMS), that can motivate the students to collaborate and share knowledge with each other through the process of combination, which considered as one of the critical aspects of knowledge management, because it helps in sharing knowledge.

According to [30], stated that, this may be accomplished by lecturers using their experience to convey information to students in many forms such as fresh ideas, inspiration, and conversations during class.Furthermore, a study conducted by [31,32], supports this finding, who found that at universities and colleges, eLMS help to support the learning environment.

Study by [33]concludes that students who are taught using eLMS obtain higher academic achievement than students who are not taught using eLMS . Moreover [34],pointed out that the satisfaction of Chinese college students with the eLMS in terms of the learner interface, content, learning community, and personalization has a favourable impact on their feeling of a virtual classroom, regardless of whether the course is synchronous or asynchronous.

5 Conclusion and recommendation

Student required external courses to improve their knowledge. Nevertheless, student depend on the courses, such as learning materials in eLMS to increase their understanding, thus they alwayskeep on updating the materials from the lecturers.Through eLMS, students become more creative and innovative to earn more knowledge thru finding and searching more resources. Students always up to date with the learning resources to ensure that are not left behind in their learning process.

Thus, by integrating multiple resources, eLMS can improve student performance and continuous support to enhance knowledge.

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