

The Case for Integrating and Leveraging Knowledge Management and ELearning for Effective Online Education

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Abstract

The rapidly growing use of technology in education is changing the way in which knowledge is produced, stored, and distributed to students locally and globally. Today, learning is no longer solely deployed in a physical classroom due to the increased rate of students enrolling in online education for various reasons. The nation's educational system greatly benefits from internet-enabled distance learning, also known as online education, by liberating students from the usual available options of on-campus degree programs such as commuting to school, preparing their day for courses, and being physically present during each cycle of their coursework. Moreover, retention rates at higher education institutions remain a focus in this present pandemic era. Data from the United States (U.S.) Department of Education (2021) revealed an overall drop for full-time students in 2020, from 76.1 percent in 2019 to 75.7 percent. For part-time students, there was an even more significant drop, from 46.5 percent in 2019 to 43.5 percent in 2020. For educational institutions, it is imperative to understand the cause of this lower retention, and the way higher education institutions could overcome this challenge. One method that is being pursued by higher institutions is online education, as a note online education is now accepted as the "wave" of the future, knowledge is being distributed across both space and time. Knowledge management techniques are also used to capture, organize and deliver this knowledge, and management systems can be used to quickly identify the most relevant information and distribute it to meet specific needs. The art of adding knowledge management and E-Learning together, is a form of technological advancement.

Introduction

In recent years the rapid and continuous advancement of technology has transformed the world into a knowledge society. A knowledge management and E-learning strategy will ensure that all students have sufficient skills needed in a rapidly developing information society which will promote open and lifelong learning. Recent research reveals great interest to introduce Knowledge Management (KM) ideas to E-learning systems. As per research Knowledge Management can facilitate eLearning, the joint studies of KM and E-Learning focus on the same fundamental goal: facilitating learning in a rapidly changing technological era. As researchers analyze as to where improvements and changes can be implemented to increase the effectiveness of E-learning through the use of Knowledge Management. E-Learning provides learners of the generation new meaning for the diffusion of knowledge, skills, and values. With the COVID-19 crisis, the online platform has proven to be an effective education delivery tool. As a result, the traditional learning method has been replaced with one established by E-Learning. In higher education, E-Learning has become a crucial learning modality in the information age over the past ten years due to its qualities of high interactivity and minimal space-time restrictions. This paper will discuss the basic concepts of knowledge management and E-Learning. Additionally, the way knowledge management and E-Learning can be integrated and leveraged for effective online education will be presented within this paper.

Literature Review

Knowledge Management

Knowledge management remains a new discipline with little known about what it actually means (Preiss, 1999 and Shariq, 1998; Nonaka and Takeuchi 1995, as cited by Darroch and McNaughton, 2002). Knowledge is defined as “meaningful information,” knowledge management is the process of creating, validating, presenting, distributing, and applying that meaningful information (Bhatt, 69 and 71). Alternatively, another way to define, knowledge management is that the discipline seeks to create or locate knowledge and manage its flow within an organization so that it “is used effectively and efficiently” (Darroch and McNaughton, 2000 cited by Darroch and McNaughton, 2002). The five phases of knowledge management enable an organization to learn, reflect, and relearn, essential for constructing and maintaining its core competencies (Bhatt 71). The first phase, knowledge creation, involves the development of new and useful ideas (Marakas, 440 as cited by Bhatt, 71). Novel ideas are understood as those that solve problems more effectively or lead to other innovations (Bhatt, 71). The newly created knowledge is validated when it has been evaluated for its effectiveness within an organization (Bhatt, 71). Validated knowledge is then presented to members of the organization through a variety of media, such as emailed documents, cloud files etc. enabling the knowledge to be fully distributed and shared throughout an organization (Bhatt, 72). In the final stage of knowledge management, meaningful information is applied to the company’s “products, processes, and services” (Bhatt 72).

E-Learning/On-line Learning

In the knowledge economy, organizations must constantly innovate and adapt knowledge in order to remain competitive (Acton, Scott, and Hill, 1). An essential component of this knowledge building process is learning (Acton, Scott, and Hill, 1). In contrast to traditional classroom-based education models, E-Learning is a relatively new approach in which instruction is “delivered via all electronic media including the internet, intranets, extranets, satellite broadcasts, audio/video tape, interactive TV, and CD-ROM” (Acton, Scott, and Hill, 1 and Govindasamy, 2001, as cited in Acton, Scott, and Hill, 1). E-Learning is meant to “improve the quality of learning by facilitating access to resources and services as well as remote exchanges and collaboration” (the European E-Learning Action Plan, cited in Yilmaz, 2012, 150). E-Learning thus allows for a broader application of training within an organization (Beamish et al., 2002 as cited by Acton, Scott, and Hill, 1). The shift in instructional context from classroom to electronic media means that instructional times can be asynchronous, allowing students to decide their limits and the length of time spent on learning (Cheong, 2001; Zhang and Zhou, 2003, as cited by Acton, Scott, and Hill, 3). With greater student control over their instructional schedules comes a need to guide them in making the right choices and avoid decisions that might limit or undermine their learning, striking a balance between student choice and instructor direction (Acton, Scott, and Hill, 3).

Knowledge Management Implications for E-Learning

The traditional model for E-Learning cannot guarantee the effective transfer of knowledge, especially ‘tacit’ knowledge, defined as knowledge “based on personal experiences, cannot be easily implied and transmitted, and incorporates human-specific factors such as beliefs, perspectives, culture” (Qwaider, 2011, 59; Yilmaz, 2012, 152). In addition, E-Learning technology must be aligned with an organization’s human and business resources in order to produce a competitive advantage (Qwaider, 2011, 59). Within an organization, an effective E-Learning program must share professional skills, the sharing and exchange of knowledge, and the gaining of competencies needed for the individual and the organization’s success (Sammour et al, 2008, 472)

Knowledge management shares this same fundamental goal of “facilitating organizational learning” (Qwaider, 2011, 60). While E-Learning focuses on the individual learner’s acquisition of knowledge. Knowledge management concerns the role and purpose of knowledge within an organization as a whole (Lindstaedt and Farmer, 375). Knowledge management can support individual learners in making connections with their instructors, bringing together “knowledge seekers and knowledge sources in such a way that they can interact with one another and more effectively share tacit knowledge” (Sammour et al,

2008, 470). Knowledge management creates “communities of practice” who can “effectively preserve organizational memory (Sammour et al, 2008, 470).

Knowledge management and E-Learning shares many features that engender integration because both rely on a system architecture and both are meant to facilitate “rather rich communication and cooperation features” (Sammour et al, 2008, 473). While knowledge management is oriented towards the larger purposes of an organization, it holds “the possibility of personalization” for individual members of that organization (Sammour et al, 2008, 473). Finally, in both cases, users are “identified by the system” and have to register with a defined profile, with “different layers of access rights” in order to facilitate the control and flow of information (Sammour et al, 2008, 473). The integration of knowledge management and E-Learning can thus “create synergies to significantly improve the creation of new knowledge and the performance of learning processes (Yilmaz, 2012, 154).

Knowledge Management Enhances E-Learning

Knowledge management can be integrated with E-Learning according to a three-step process, following the Nonaka and Takeuchi’s Knowledge Spiral Model (Yilmaz, 2012, 154). First, in the socialization stage, an organization’s members share their expertise and knowledge with each other via chat rooms, discussion forums, and conference calls (Yilmaz, 2012, 154). This stage also resembles the collection and validation phases of knowledge management. In an E-Learning context collecting and validating knowledge could be achieved through “workshops for sharing information and/or success stories may be organized so that everyone can take advantage of such new knowledge and success stories,” thus enhancing and improving the individual learner’s experience (Sammour et al, 2008, 471). In the next stage of integration, ‘tacit knowledge’ is transformed into ‘explicit knowledge’ that is stored within “a certain structuring and classification system” (Yilmaz, 2012, 154). Here, knowledge management plays a crucial role in providing options for the classification and structuring of this explicit knowledge (Yilmaz, 2012, 154). This integration of knowledge management with E-Learning programs has the potential to increase learning efficiency and reduce time in preparing instructional materials for the teacher (Qwaidar, 2011, 60). In the final stage of integration according to the knowledge spiral model, known as the internalization, the explicit knowledge stored within the system is transmitted to the individual learner, becoming for him or her tacit knowledge (Yilmaz, 2012, 154). Knowledge management can also enhance the structure and delivery of curricular materials. An E-Learning program built around knowledge-management principles would have a shared “repository of curriculum revision efforts can include information about the research conducted, effectiveness measures, best practices and lessons learnt” (Sammour et al, 2008, 474). Content would be organized into modules which can be updated by authorized users and customized to fit the needs of specific groups of learners” (Sammour et al, 2008, 474). The E-Learning portal may also contain archived question sets and answer sheets to assist an instructor in assessing student performance (Sammour et al, 2008, 475). Finally, knowledge management can ensure an e-learning course is serving the strategic goals of an organization by “by creating a repository of internal and external information that is relevant to the institution, such as benchmarking studies, trend scans, current programs on offer and data about competing institutions” (Sammour et al, 2008, 475).

Application of E-Learning

In a knowledge economy, learning, and E-Learning are of “strategic significance” for organizations, providing the ability to add value to products and services through knowledge (Kessels, 502). “The development of core competencies is the crucial objective here and requires that firms acquire, create, disseminate, and apply knowledge to improve and innovate processes, products, and services” (Kessels, 502). Traditional methods of learning alone are insufficient to keep employees up to date with rapidly evolving information and skills (Acton, Scott, and Hill, 8). E-Learning can thus be an important means for “organizations to keep up with changes in the global economy” (Acton, Scott, and Hill, 8). Components of such an E-Learning program could include subject-matter expertise, problem-solving skills, the development of reflective skills and meta-cognitive thought processes, and the cultivation of communication skills (Kessels, 503). Online education is a delivery platform that allows students to learn

from home (Bettinger & Loeb, 2017). Online degrees and courses have during the past ten years become the norm for a wide range of non-traditional students, particularly those who decide to continue working full-time or raise families. Many online degree programs and courses are offered through the host institution's online learning portal; however, some are executed using other technology (Bettinger & Loeb, 2017). The main difference between online and traditional learning, despite minor variations, is that students who study online are not required to adhere to the traditional requirements of on-campus degree programs, such as traveling to and from school, planning their days around classes, and being present physically for each cycle of their coursework. A technology-based delivery system is also used in online education (examples include Moodle, Blackboard, and Canvas) (National Center for Education Statistics, 2021). A key distinction is the delivery method's use of technology. Additionally, the COVID-19 crisis demonstrated the effectiveness of the online platform as a method for delivering education, but it also presented difficulties for students of all ages.

The advantages of online learning greatly depend on the student. Some students must seek online education in order to live at home with their children, while others simply like the convenience of learning. One of the most important advantages of online degree programs is location (Bettinger, Fox, Loeb, & Taylor, 2017). In other words, students can complete their education from anywhere in the world. Online courses promise participation regardless of where students live or plan to enroll, potentially changing the educational opportunities available to less fortunate students in traditional schools. Furthermore, online platforms enable artificial intelligence to give the ideal course scheduling and material to each student, hence increasing the quality and learning of education (Bettinger & Loeb, 2017). For instance, the new "intelligent" tutoring programs identify the students' true weaknesses and consider why certain mistakes are made by the students. The instructional materials are then modified in accordance with the needs of the students in these programs.

Nevertheless, such commitments have not yet been fully fulfilled. Rather than leveraging technology to differentiate student learning, the great majority of online classes mimic face-to-face lessons with professors. Online classes may enhance access, but they are also intimidating, especially for students who are less prepared, according to a recent study by Lindsay Fox and Eric Taylor (2017). These students frequently do worse online than they do in traditional classroom settings; taking online courses increases their chance of dropping out, which impedes their ability to advance in their education (Bettinger, Fox, Loeb, & Taylor, 2017).

Online education courses are becoming increasingly popular, one in every three college students now takes at least one course online during their academic career, a figure that has tripled in the last decade (Lederman, 2019). The opportunity for cost savings and the ease of scaling drives ongoing investments in online education from both public and private institutions. The proportion of all enrolled college students taking at least one online class is increasing, rising from 33.1 percent the previous year to 34.7 percent in fall 2018. (Lederman, 2019). With the coronavirus disease pandemic of 2019 (COVID-19) crisis, online education remains the most important driver of growth in postsecondary enrollments (Hoofman & Secord, 2021).

Online learning and COVID-19: a meta-synthesis analysis

The objective of the study was to identify the optimum online platform, class model (synchronous or asynchronous model), and most effective duration of online lectures for medical students. The authors note that the "COVID-19 pandemic has had a catalytic effect on the changes in educational processes worldwide" by causing an abrupt shift from face-to-face to online classes with limited time to plan and prepare course materials. Their global study focused on post-secondary classes conducted through the Zoom and Google online learning platforms. The authors concluded that E-Learning was feasible, but more study is needed to "detect students' and teachers' needs and provide prompt answers and support with digital tools."

Educational Transformation: An Evaluation of Online Learning Due to COVID-19

The study's intent was to gauge the impact of COVID-19 and the subsequent transformation from offline, i.e., on site, to on-line learning. Data was collected through online Indonesian college student

interviews using WhatsApp-call and Google-meets. The prevailing culture historically favors face-to-face learning with web-based instruction as only a support. The pandemic forced the expanded use of on-line instruction and significant adjustments by educators and students.

The study found that students were generally favorable about on-line learning but noted that the need to improve student access to hardware devices (“cellphones, laptops, desktops, etc.”) internet access, and more effective lecturers consistent with the platform. The authors concluded that, to be effective, educational institutions, educators, and teachers must adjust to new environments since educators “will always need technology as an eternal companion in bridging knowledge to be distributed to students, so it is necessary for lecturers to improve their teaching quality and capacity by utilizing IT.”

Transition to online learning during the COVID-19 pandemic

The purpose of the study was to learn student perceptions of on-line learning before and after the COVID-19 impact. The premise was that “students would be overall sanguine to the project given that access, technology integration, and family and government support during the pandemic shutdown would mitigate the negative consequences.” The authors note that research regarding students’ readiness for on-line learning is sparse. Understanding student perceptions is critical for developing successful interventions and correct deficits in learning. Data was collected through an on-line survey of college students at a college in Northeastern North America in 2020. The researchers found student’s feelings about online instructions was mixed, though more than two-thirds felt stressed and more than one-half were afraid or panicked with the transition. Most noted that self-discipline was a problem at least a portion of the time, one-fifth strongly disagreed that their grades accurately reflected how much they had learned with the instructions. Forty-five percent of the respondents felt that the online instruction would leave them behind students who received classroom instruction. The authors found that the students in their study missed interacting with their peers in class and on campus. Many reported difficulties concentrating and heightened stress and most students reported increased workloads as the work shifted online.

Effects of Digitalization on Higher Education in a Sustainable Development Framework – Online Learning Challenges during the COVID-19 Pandemic

The 2021 study of Romanian university students, based on a questionnaire survey of teachers and students, intended to determine the impact of “emergency distance learning “replacing onsite instruction due to COVID-19. In practice, the objective was to determine whether to continue online instruction following pandemic conditions. The authors premised that “a successful transition to online education requires a high degree of adaptability, which involves technological and pedagogical support, as well as elements for monitoring and evaluation of participants to online education. “The authors determined that the teaching method – lectures with a few questions versus student exercises coupled with questions and answers – affected student satisfaction, the latter method being preferred. While noting that some disciplines are better suited for digitalization, the authors concluded that online instruction should be implemented with frequent on-site interaction with teachers to counter the potential effects of isolation.

A Survey Study on U.S. College Students’ Learning Experience in COVID-19

The objective of the study was to identify the impact of COVID’s isolation requirements and the substitution of online versus onsite instruction, especially mental health measured by the students’ expressed levels of anxiety and depression one year after the outburst of COVID-19. Researchers collected data through an online survey of 62 Chinese and American college students that included multiple, spaced Human Intelligence Tests and questions related to learning gains (or losses) during the online instruction period, perceptions of mental health and support during the period, and benefits/barriers accompanying online learning. The authors concluded that the learning experience during COVID was positive, the main complaint being the lack of face-to-face interaction with instructors. Consequently, a hybrid model – a combination of online and onsite instruction – is best as “on-campus, in-person learning is not always the best learning mode, as the majority of us [researchers] thought.” The authors also noted more research is needed due to the small sample size (62) and the predominance of Asian students (66%).

Statistics

Research Question

What are student's perception of the need for integrating and leveraging Knowledge Management and E-Learning for Effective Online Education?

Hypotheses of the study

In addition to analyzing the above mentioned objectives, the study also has tested the following hypothesis:

Null Hypothesis 1 Ho: There are no significant differences between male and female students perception of the need for integrating and leveraging Knowledge Management and E-Learning for Effective Online Education

Methods

Data were collected from 50 online students using a questionnaire of whether there was a case for integrating and leveraging Knowledge Management and E-Learning for Effective Online Education

		GENDER	Age
N	Valid	50	50
	Missing	0	0

Table 1 Gender and Age

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	4.0	4.0	4.0
Female	22	44.0	44.0	48.0
Male	25	50.0	50.0	98.0
No entry	1	2.0	2.0	100.0
Total	50	100.0	100.0	

Table 2 Gender

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	4.0	4.0	4.0
18-30	36	72.0	72.0	76.0
31-35	10	20.0	20.0	96.0
36-40	2	4.0	4.0	100.0
Total	50	100.0	100.0	

Table 3 Age

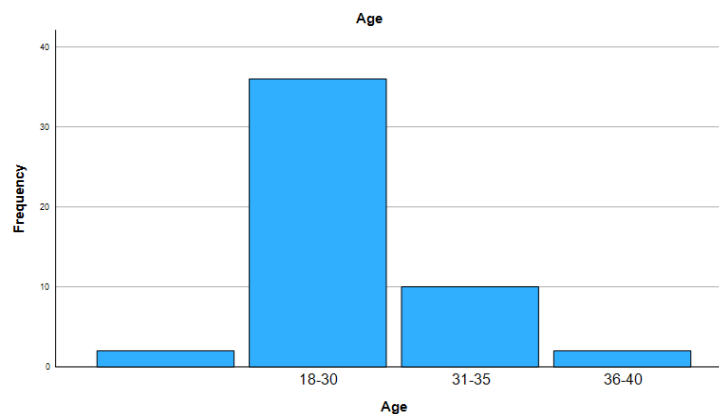
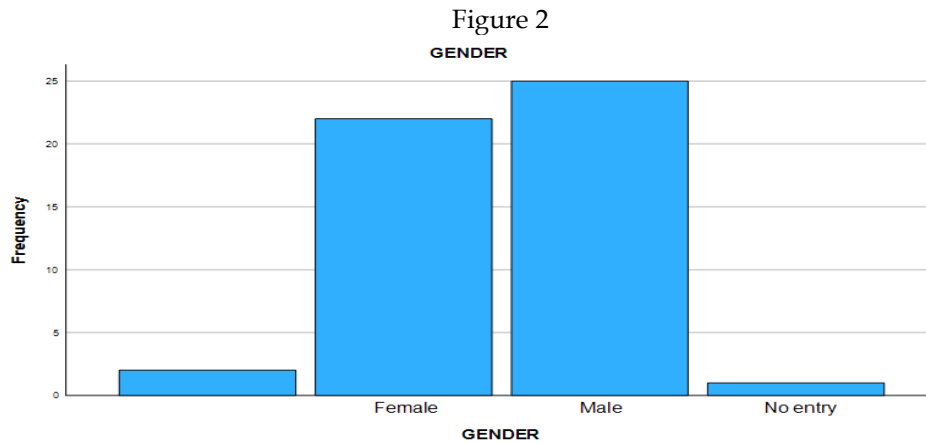


Figure1



Study population

Data were collected from students in an online university who had completed in-person classes in at Campbellsville University in KY, USA Friday October 28, 2022. We performed convenience sampling by recruiting participants at a weekend face to face Residency. The participants voluntarily provided informed consent. Students were instructed to return the questionnaire to the professor after completing the survey. The duration for survey completion was approximately ten minutes. The appropriate sample size required for regression analysis was computed using the G*Power 3.1.9.2 software. For an effect size (f^2) of 0.02, significance (α) of 0.05, and power ($1 - \beta$) of 0.80, the minimum required sample size was 50, and we distributed the questionnaire to 50 students with the hope of no potential withdrawal. A total of 50 questionnaires were retrieved, and after excluding two questionnaires for having incomplete responses, a total of 48 were included in the final analysis.

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9.928	10	.993	1.148	.355 ^b
	Residual	31.989	37	.865		
	Total	41.917	47			

Table 4 ANOVA

Measures

General characteristics

We collected information about participants' sex and age with sex characterized as male and female and age with the ranges of 18-30, 31-35, 36-40.

Statistical Analysis

To investigate the factors for the Case for Integrating and Leveraging Knowledge Management and E-Learning for Effective Online Education, we first examined control variables among the participants. Differences in perception of general characteristics (sex, age,) were analyzed using one-way ANOVA.

Results

Perception of students for the integration and leveraging of knowledge management and E-Learning for effective education value of 0.335 shows that the correlation was not statistically significant on the students' perception of learning in the 21st century. Students' perception is weak on whether it is important to integrate and leverage knowledge management and E-Learning for effective education.

Conclusion

The Coronavirus pandemic appears to have transformed the world of education, and professors' choice of remote working software for creating a virtual classroom has a direct impact on their success as an educator at this time. Video conferencing software has infiltrated not only classroom instruction, but

also education administration, parent-teacher conferences, and staff and school board meetings (Stone, 2020). Video conferencing software such as Zoom and Teams are attempting to replicate the traditional classroom as closely as possible. This means that professors who use video conferencing software must create a collaborative environment in which students can interact naturally with one another and with the teacher (Stone, 2020). However, there are some issues with virtual communication when using video conferencing software. These difficulties include students' inability to focus on screens, technological issues, a sense of isolation, and teacher training (Stone, 2020). In today's knowledge-based economy, organizations must be able to effectively identify, adapt, and direct their use of knowledge (Darroch and McNaughton, 2000 cited by Darroch and McNaughton, 2002; Lindstaedt and Farmer, 375). Likewise, individuals must be able to access meaningful information outside of the limitations of the traditional classroom-based environment (Yılmaz, 2012, 150). Within organizations, e-learning is a promising tool for distributing training materials, but such information must be communicated effectively and aligned with an organization's larger purposes and competitive goals. Knowledge management ensures that e-learning achieves this function within the context of a larger organization.

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