

# Impact of Artificial intelligence on Online Learning During COVID-19: A Framework

**Dr. Abdulmunem Alshehhi<sup>1</sup>, Prof. Wathiq Mansoor<sup>2</sup>, Ms. Ameena Alshehhi<sup>3</sup>, Dr. Hamad AlMulla<sup>4</sup>, Ms. Dahlia Mansoor<sup>5</sup>**

<sup>1,3</sup> Abu Dhabi, UAE

<sup>2,4,5</sup> Dubai, UAE

Email: <sup>1</sup>a.s.alshehhi@gmail.com, <sup>2</sup>wmansoor@ud.ac.ae, <sup>3</sup>wujdaan@gmail.com, <sup>4</sup>s20141014@ud.ac.ae, <sup>5</sup>dahlia22@gmail.com

## ABSTRACT

This paper intends to evaluate the implementation of Artificial Intelligence and Online Learning in Learning entity, and what process should be applied to ensure expanding Online learning within an organization. The research paper shows the relationship between Online Learning and Learning Organization. In addition to that, how they can achieve a higher outcome through Artificial Intelligence. An understanding of Online Learning can help to build system which will increase organization outcome. This paper analyzes using the existing literature to present a learning framework and shows the related hypotheses. This paper also offers a theoretical basis. It also combines a framework that provides a valuable perspective on the subject.

## Keywords

Artificial Intelligence, Online Learning, and Learning Organization Outcome

Article Received: 10 August 2020, Revised: 25 October 2020, Accepted: 18 November 2020

## Introduction

The study presents the impact during the COVID-19 period of Online Learning (OL), Artificial Intelligence (AI), and Learning Organization Outcome (LOO) and how they work. The researchers also evaluated relationships between them to find their effects. The main objective is to develop an OL framework using an AI to increase the learning organization's outcome, evaluating for future study. The researchers of this study have developed two questions related to this study.

1) how can OL and AI help LOO During COVID-19 time? And

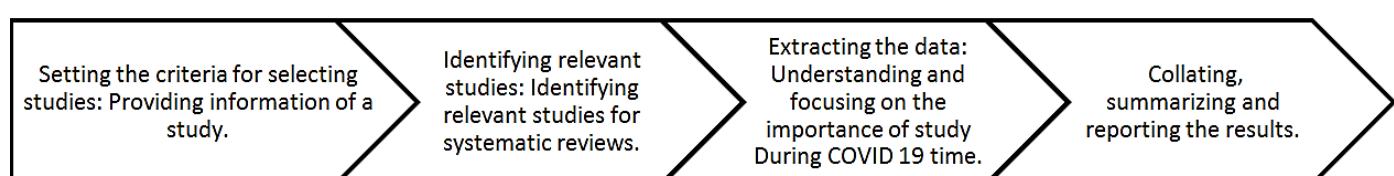
2) what is the relationship between OL, AI, and LOO?

OL becomes viable through online service and the internet. Based on that number of researchers are working in OL to increase student learning outcomes while reducing resources, particularly at a high level of education (Nguyen, 2015). Okyere and Nor (2011) have a learning plan that refers to any programs suggested by the entity;

Unorganized learning is related to informal discussions of spontaneous or sharing ideas. We need to know what the learning is. Webster (1992) said that learning is a knowledge gained by an organized study in different fields or the processes of gaining knowledge or skill. The researcher noted that learning is about, at this time, expanding to covers a better capability to process and bring new knowledge that develops people (Martha 1994). The component of satisfaction and persistence for OL can be social cognitive, interaction, and social integration (Waldner, McGorry, & Widener, 2012). An effective collaboration and knowledge-sharing skills are crucial for successful people in the modern economy, where much professional work in teams (Zach, 2009).

## Research Method

A comprehensive review of the related literature, academic references, and official websites in OL, AI, and LOO, can help develop a framework for the data collection analysis during the COVID-19 period. The researcher has used four stages to review the related information, as below:



The researchers take on this LR in four distinct stages on lunched methods. Researchers have a target to develop a framework for OL, AI, and LOO as primary variables. The use of a framework will help to confirm or reject the impact.

### Literature Review

There is a need to examine and analyze each term's concepts and the concepts associated with this paper on each terminology and critique ideas using current trends in the study area. LR helps to identify gaps that exist, which further helps justify this study's importance and potential contributions.

#### Learning Organization

LO is a type of organization (Örtenblad 2001). Also, it can be an ideal form of organization (Örtenblad 2001). Many studies in Human Resource Management (HRM) contribute to OL capability (Arunprasad 2015). LOs can create useful OL methods through Individual learning, team learning, and systems thinking. (Roland 2006). Knowledge adds to organizational change successfully. How the process works in real life is one of the main obstacles to change. Organizations that support learning to beat these challenges improve their technique, endure, and grow in industries, energy, and publishing. Many logistical efforts are developed, align to quiet learning compared with constant growth. Nevertheless, the most significant possibilities may lie in longer and using essential change logistics management to create new thinking maps and a strategic approach (Smith 1995).

John and Smith (2012) simplified learning and adaptive systems within organizations operating by sustainability standards. Furthermore, the commercial aviation industry in the United States of America (USA) has efficiently put air travel safety through developed a learning and adoption support system. Any organization can employ the features of such a learning and adaption system to improve the performance and practice of sustainability (John and Smith 2012). At the same time, (Cho 2011) and Choi (2015) evaluated the LOO Questionnaire framework from public sector organizations. This study showed that the organizational level mediating impact on the links between the individual and group of LO

characteristics and entity performance positively impact organization performance (Pokharel and Choi 2015). Carol (2005) provided an overview of a conversation concerning organization learning and the LO. An effective LO requires a deep learning cycle and acknowledgment, which can be initiated by considering the dynamic exchange of structuring and the tangible factors within organization learning systems. Organization learning performance and learning result from the dynamic interaction between the concrete and structuring variables. Human values and reactions are also crucial to organizational learning (Carol, 2005).

Some researchers have connected the entity level learning design and the entity hologram theory. Becoming an LO enhances an entity's capability by allowing effective and improved strategies within the organization. Furthermore, it follows development over time as the entity tries to be an LO. The organizational characteristic survey process support entities to improve. LOs understand and reach integrity of convulsion the main business methods, relating their necessary way to the effects they provide in terms of their operating conditions (Benoit and Mackenzie 1994). Stuart (1997) described the construction of a session on LOs for Auckland Business School. He gave various uses of the concept of the LO.

Learning is described as cognitions, behaviors, and emotions since collective knowledge has reached an education outline by checking how entities can learn individuals' collections. In contrast, deuteron learning is the capacity to learn and individuals' energy to lead any useful understanding. The author presented a summary of OL's literature and outlined factors that are considered essential: strategy, knowledge, and leadership. Stuart discussed the course, dispensing with the fundamental thoughts of learning in entities. He presented a framework that may help researchers learning of entity and outline how to teach the time. This paper's framework gives an overview of the LO approach and results from theoretical conceptualization (Stuart 1997). Ramona and Vesna (2016) identified the dimensions of learning capabilities and an LO's features within two service companies. Also, they placed the relationships between learning capability and organizational culture (Ramona and Vesna 2016).

## Online Learning

OL is commonly arguing that a critical challenge for e-learning is to encourage learner participation (Hrastinski, 2008). Admission in online courses is erosion rates remain high. It provides ease in involvement, the comfort of passage, and support. Moreover, OL is likely to be an essential place in learning gain (Croxton, 2014). However, OL refers to online training and learning, shared learning, cyberlearning, virtual learning. Moreover, OL is direct online and on a full range of e-learning methods and platforms across all disciplines (Keengwe & Kidd, 2010). There is the hope that OL will give learning around the world to lots of people with different times as they have access to the Internet (Nguyen, 2015).

Tacit knowledge and transfer in the cyclic framework are identified; implicit knowledge transformation is encouraged through IT and e-learning techniques. Liz (2006) argues that OL and practices technologies can play an essential function in promoting and promoting OL. Nevertheless, Liz concentrated on evidence from OL, IT, and OL research set up the plan that IT and techniques of OL give the facilities to change and interact tacit knowledge. It happens through transforming tacit knowledge into explicit knowledge and spreading it through organizations. The new faculty roles in OL environments and some OL and teaching implications are also provided (Keengwe & Kidd, 2010). Some topics are under-researched and are displayed as the most interactive issues, such as reflection, objectivity, creation of suitable learning area, and needs for cooperation in learning. Active uprooting and communication of tacit knowledge are vital requirements for useful shared research between the OL, IT, and OL guidance research communities (Falconer 2006).

The component of satisfaction and persistence for Online Learning are 1) social cognitive theory, 2) interaction equivalency theorem, and 3) social integration theory. They can support improving the possibility of building a learning working area that raises essential learning, is enough, and is one in which students will endure (Croxton, 2014). OL is not a learning service; exceptionally, OL is a facilitator. OL's and learning service's marriage includes t to transform both endeavors by freeing learning services from geographic limitations and

providing OL with a tool to raise match. Thus, OL is not a mere pedagogical interest. Instead, it is core to the prospect of learning service. Externally OL, students using online do not feel the heavenly advantages of learning service, ranging from public commitment to improved learning outcomes (Waldner, McGorry, & Widener, 2012).

Zach (2009) said to identify constructivist learning's significant hallmarks as having contributed to successful understanding in the online environment. The collaborative learning used in the new courses did support learning, including the instructor acting as a learning facilitator and education, and social process learning, with increased personalization of the learning environment and the extension of a sense of community amid the students studying online.

## Artificial intelligence

The main objective of AI is optimizing usual methods, increasing their activity and performance. AI is a part of ability building and studying machines intended (Plitnichenko, 2020). AI gives various positive fields, more learning. Researchers insist that AI and Machine Learning can increase education levels (Kuprenko, 2020).

This time, AI has matched a significant research area in virtually all areas: engineering, science, education, medicine, business, accounting, finance, marketing, economics, stock market, and law, among others (Oke, 2008). AI as a tool gives attention to other researchers and business entities, mainly by progressing machine learning. However, notwithstanding AI the high potential for solving problems, there are problems associated with possible use and a loss of knowledge regarding strategically using AI to create business value.

AI utilization in teaching related to representational / knowledge-based possessed AI Data. It needs competencies that are unconventional from regular programming and computational thinking (Tuomi, 2020). All fields of AI will affect. The most significant might well be learning because learning is essential and because the current preparation often goes a lot to be wanted (Chace, 2020). AI technology generates a new generation of labor, such as AI's human intelligence, which has become the critical factor

for entities to survive and transform in a changing environment (Ertel, 2018). AI and machine language are used in recruitment, talent selection, hiring, performance analysis, collecting data about employees, and providing accurate data (Vivek, 2019). Many researchers and experts advise industries to use AI tools, and digital technologies in Human Resource, AI, and machine language are explicitly used in recruitment, talent's selection, hiring, performance analysis, collecting data about employees, and providing accurate data (Vivek, 2019).

Luo (2018) found that Java and AI language Prolog is joint in software system to create a guidance learning system (guide teaching system) based on AI. AI is studying human intelligence's rules and introducing characteristics, ethics, and application fields. Besides, the guided learning system's problems that base on AI are defined and analyzed using the NET three-layer structure system, which has good dependability and maintenance.

Furthermore, joining the tour guide course teaching, the guide teaching system's function is more user-friendly. The linked technologies analyze besides the system function design, system requirements, and system database design. The specialist also studied the implementation methods of each sub-module. Moreover, the campus network's guide teaching system is illustrated. It has the features that the traditional learning system cannot consider the human brain's forgetting curve (includes the learning strategies) and review the knowledge periodically (Luo, 2018).

#### Online Learning During COVID-19 Time

The World Health Organization takes Covid-19 as a virus that threatens humanity. This pandemic has led to the stop of many activities such as educational activities. It shows the fact that OL is will be more sustainable even within the emergency case. Simultaneously, the hybrid of educational activities and their challenges will be more evident during this pandemic, transforming them into opportunities (Babatunde & Soykan, 2020).

COVID 19 forced the education to move to online learning for the students. The pandemic led many traditional academic institutions, who refuse to

change their traditional approach earlier, to go online learning. (Dhawan, 2020). There is a shift from the normal learning process to electronic learning. The world is entirely dependent on information technologies during this crisis (Vishal, 2020).

#### Framework and Hypotheses Development

##### 1. Theoretical Framework

The heart of OL is AI. It plays an essential role in improving LO. A strong AI and E-Learning are playing a role in developing the LO relating to the detection of several competitive strategies. Adaptive Intelligent Tutoring Systems is an effective method of computer learning. Now, work has been dedicated to combining these systems.

The researchers have proposed an integrated approach, using OL systems to drive the connection and personalize instruction based on adaptation to learners' learning style (Phobun & Vicheanpanya, 2010).

When AI is aligned with organizational strategy, E-learning produces a significant effect on LO, which helps the companies to anticipate and respond to develop the learning (Pipatsarun & Jiracha, 2010). Moreover, Computers have been employed within training for many years, often with limited results. Currently, research within the field of AI is having a positive impact on educational applications (Marlene, 1985). Besides, management shall understand the implication of E-service quality, information quality, system quality, system USE, and user satisfaction concerning the E-learning portal success. Online education can be a superior instruction mode targeted to learners with specific learning styles (Shahzad1, Rohail, Adejare, Arsalan, & Rab, 2020).

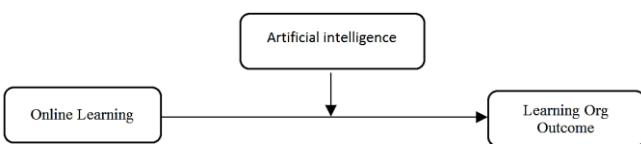
The table below shows the theoretical justifications for building the relations between framework variables:

## 2. Theoretical justifications

Authors	Linkage area	Finding
Pipatsarun Phobun & Jiracha Vicheanpanya	Online Learning & AI	“Adaptive Intelligent Tutoring Systems is an effective method of computer-based learning”.
Marlene Jones	AI & LO	“The field of artificial intelligence (AI) is having a positive impact on educational applications”.
Shahzad, Rohail, Adejare, Arsalan, & Rab	Online Learning & LO	“Online education can be a superior mode of instruction if it is targeted to learners with specific learning styles”

## 3. Conceptual Framework

The researchers have used AI as a moderator variable between OL and LOO. At the same time, there is a direct relation between OL and LO. Using OL through AI shall increase the LOO. Also, OL shall have an immediate positive effect on the LOO. The table below shows the theoretical justifications for building the relations between framework variables:



## 4. Hypotheses

- Hypothesis 1: AI moderates the relationship between OL and LOO such that when AI practices are high, the relationship will be positive.
- Hypothesis 2: OL has a significant positive association with LOO.

## Conclusion

During COVID 19, AI becomes one of the essential variables for the LO. It is required to process the knowledge and learning. Also, OL can work together in a system within LO to improve outcomes within the organization. AI can play a role as a moderator between OL and LOO, making it more predicational. OL can support the learning system within the organization to improve organizational outcomes. The heart of the learning system is AI. It plays an essential role in improving an organization's learning outcomes.

## References

- [1] Martha, G. W. (1994). Creativity and the Learning Culture. *The Learning Organization*, 4–5.
- [2] Waldner, L., McGorry, S., & Widener, M. (2012). E-Service-Learning: The Evolution of Service-Learning to Engage a Growing Online Student Population. *Journal of Higher Education Outreach and Engagement*, 123 - 150.
- [3] Zach, L. (2009). Using the Online Learning Environment to Develop Real-Life Collaboration and Knowledge-Sharing Skills: A Theoretical Discussion and Framework for Online Course Design. *MERLOT Journal of Online Learning and Teaching*, 590 - 599.
- [4] John, P., & Smith, P. A. (2012). Sustainability, organizational learning, and lessons learned from aviation. *The Learning Organization*, 77–86.
- [5] Smith, S. (1995). The new logistics management. *Logistics Information Management*, 24–33.
- [6] Örtenblad, A. (2001). On differences between organizational learning and learning organization. *The Learning Organization*, 125–133.
- [7] Roland, Y. K. (2006). Development and Learning in Organizations. *An International Journal*, 10–12.
- [8] Cho, J. H. (2011). The impact of the learning organization environment on the organizational learning process in the Korean business context. *The Learning Organization*, 468–485.
- [9] Pokharel, M. P., & Choi, S. O. (2015). Exploring the relationships between the learning organization and organizational

- performance. *Management Research Review*, 126–148.
- [10] Benoit, C. A., & Mackenzie, K. D. (1994). A Model of Organizational Learning and the Diagnostic Process Supporting It. *The Learning Organization*, 26–37.
- [11] Stuart, F. (1997). A time for reflection: learning about organizational learning. *The Learning Organization*, 168–179.
- [12] Ramona, P., & Vesna, S. V. (2016). Learning in organization. *The Learning Organization*.
- [13] Hrastinski, S. (2008). What is online learner participation? A literature review. *Elsevier*, 1755-1765.
- [14] Croxton, A. R. (2014). The Role of Interactivity in Student Satisfaction and Persistence in Online Learning. *MERLOT Journal of Online Learning and Teaching*, 314 - 325.
- [15] Keengwe, J., & Kidd , T. (2010). Towards Best Practices in Online Learning and Teaching in Higher Education. *MERLOT Journal of Online Learning and Teaching*, 533 - 541.
- [16] Nguyen, T. (2015). The Effectiveness of Online Learning: Beyond No Significant Difference and Future Horizons. *MERLOT Journal of Online Learning and Teaching*, 309 - 319.
- [17] Falconer, L. (2006). Organizational learning, tacit information, and e-learning: a review. *The Learning Organization*, 140–151.
- [18] Plitnichenko, L. (2020, Dec 15). *EDUCATIONAL TECHNOLOGY* . From 5 Main Roles Of Artificial Intelligence In Education : <https://elearningindustry.com/5-main-roles-artificial-intelligence-in-education>
- [19] Kuprenko, V. (2020, Dec 15). *Medium*. From Artificial Intelligence in Education: Benefits, Challenges, and Use Cases: <https://medium.com/towards-artificial-intelligence/artificial-intelligence-in-education>
- education-benefits-challenges-and-use-cases-db52d8921f7a
- [20] Oke, S. A. (2008). A Literature Review on Artificial Intelligence. *International Journal of Information and Management Sciences*, 535 - 570.
- [21] Tuomi, I. (2020, Dec 15). *The use of Artificial Intelligence (AI) in education*. From <https://research4committees.blog/2020/09/07/the-use-of-artificial-intelligence-ai-in-education/>
- [22] Chace, C. (2020, Dec 15). *The Impact of Artificial Intelligence on Education*. From <https://www.forbes.com/sites/calumchace/2020/10/29/the-impact-of-artificial-intelligence-on-education/?sh=6330e9f950df>
- [23] Ertel, W. (2018). *Introduction to artificial intelligence* . New York: Springer International Publishing.
- [24] Vivek, Y. (2019). A Study of Artificial Intelligence and its role in Human Resource Management Article. *IJRAR*, 20-24.
- [25] Luo, D. (2018). Guide Teaching System Based on Artificial Intelligence . *international Journal of Emerging Technologies in Learning*, 90 - 102.
- [26] Babatunde, O. A., & Soykan, E. (2020). Covid-19 pandemic and online learning: the challenges and opportunities. *Interactive Learning Environments*, 1 - 13.
- [27] Dhawan, S. (2020). Online Learning: A Panacea in the Time of COVID-19 Crisis. *Journal of Educational Technology Systems*, 5 – 22.
- [28] Vishal, S. D. (2020). Global Impact of E-learning during COVID 19. *SSRN Electronic Journal*.
- [29] Phobun, P., & Vicheanpanya, J. (2010). Adaptive intelligent tutoring systems for e-learning systems. *Procedia Social and Behavioral Sciences* , 4064 – 4069.
- [30] Pipatsarun, P., & Jiracha , V. (2010). Adaptive intelligent tutoring systems for e-

- learning systems. *Procedia Social and Behavioral Sciences*, 4064–4069.
- [31] Marlene , J. (1985). PPLICATIONS OF ARTIFICIAL INTELLIGENCE WITHIN EDUCATION. *Computers & Mathematics with Applications*, 517-526.
- [32] Shahzad1, A., Rohail, H., Adejare, A. Y., Arsalan, H., & Rab, L. N. (2020). Efets of COVID-19 in E-learning on higher education institution students: the group comparison between male and female. *Quality & Quantity*.
- [33] Carol, G. (2005). Organizational learning vs the learning organization: A conversation with a practitioner. *The Learning Organization*, 383-388.