

## Adapting distance online learning methods for communication and media courses: Perceptions and attitudes

Thouraya Snoussi <sup>1</sup>, Habib ben belkacem <sup>2</sup>, Mutlaq sauoud al-Mutairi <sup>3</sup>, Sofien Abidi <sup>4</sup>, Mona Khalaf Alharbi <sup>5</sup>

<sup>1</sup>University of Sharjah, College of Communication, Mass Communication Depart, UAE

<sup>2</sup>King Saud University, College of Arts, Mass Communication Depart, KSA

<sup>3</sup>King Saud University, College of Arts, Mass Communication Depart, KSA

<sup>4</sup>Le Havre University, Media and Communication Sciences Depart, FRANCE

<sup>5</sup>King Saud University, College of Arts, Mass Communication Depart, KSA

### ABSTRACT

The study revolves around the perceptions of university professors in the Arab region, about the appropriateness of using online distance learning (DOL) methods in Communication and Media courses, with a particular emphasis on attitudes towards necessary amendments in curricula, teaching methods, and Courses learning objectives' (CLOs) assessment tools. The research was guided by the theory of social constructivism, which states that the learning process is established on the basis of "inference" through information and communication technology and the use of cooperative learning strategies so that learners participate in the formulation of goals and reach their achievement. Qualitative analysis based on semi-structured interviews was adopted to address the research questions; Findings showed that several strategies were called upon by the participants such as intensive online discussions, student-activated workshops, and online games; According to participants, online test questions differ from those designed in the paper-based test; they cited many examples such as true or false, multiple choice, short answers, and essay questions. While designing the tests, questions that require good memory have been incorporated, along with others that require deep understanding, analysis and criticism. Finally, it must be emphasized that the use of learning management systems and remote testing was not an option for all participants as several circumstances have prevented certain Arab universities from carrying out these experiments, including poor infrastructure and weak communication network in certain Arab countries, as well as the attitude of some that communication and media courses do not fit the nature of remote exam' questions.

**Keywords:** Distance Online Learning; Communication; media courses; Learning methods, Course learning Objectives; Assessment tools.

### Corresponding Author:

Thouraya Snoussi  
Department of Mass Communication  
University of Sharjah  
Sharjah, UAE  
Email: tsnoussi@sharjah.ac.ae

### 1. Introduction

The Covid-19 pandemic has accelerated a quantum leap towards digital societies par excellence; information and communication technology (ICT) have profoundly affected economies and societies, the way of working, communicating, engaging in social activities, enjoyment and play, as well as driving innovation in many different areas of life. No wonder there is a very strong relationship between the development of learning skills and the use of digital technology[1-3]. In fact, ICT provides strong support for contemporary educational approaches and pedagogies based on emphasizing skills, in particular, the skill of generating knowledge rather than simply imparting it, performance-based approaches, and greater attention to how information is used rather than just its content. Moreover, the flexible time-space provided by the computer as a cognitive tool and the curriculum integration with ICTs helped to increase the interaction of learners with others seeking to exchange

experiences, which ultimately led to the emergence of new scenarios and teaching methods ranging from forms of the self and cooperative learning such as play-based learning, inquiry-based learning, project-based learning, flipped classrooms, and other learning methods for which ICT has been the catalyst. The development of the learning process touched all fields and all levels from elementary to graduate studies. The forced transition to distance online learning led to a young experience in many countries, during which educational curricula and teaching methods witnessed remarkable growth, such as the universities of the Arab region where this fresh practice gave rise to different perceptions and attitudes about nowadays teaching in terms of styles and methods: Some Arab university professors value the use of modern technologies in learning and highlight them as tributaries to progress, while others stand wary of some of the obstacles they cause. As nearly all Arab universities are now engaged in massive reviews of course delivery methods and curricula design to be more suitable for the new digital environment, the authors in this study chose to investigate university professors' perceptions of the appropriateness of using Distance Online Learning (DOL) teaching methods in communication and media studies in Arab higher education institutions based on their experience over the past two years [4, 5]. Emphasis will also be placed on attitudes towards recent revisions in curricula, learning methods, examinations and learning outcomes.

## 2. Literature review

This section is dedicated to thematically addressing teaching methods related to the field of public relations and mass communication; for this purpose, the authors chose to refer to effective teaching methods and online strategies for Teaching Communication and Media Courses (TCMC). Special emphasis was then placed on the theoretical approaches used to understand the methods of TCMC. The rich experiences with regard to online teaching in the aforementioned field were also reviewed.

### 2.1. Effective pedagogies for teaching communication and media courses (TCMC)

According to the literature, five effective educational components should be incorporated into classroom exercises to enhance learning, particularly in mass communication and media studies:

1) Additional learning: Teaching theorists suggests that setting learning objectives for students, inserting tasks, and providing good examples [6] will improve performance and reduce anxiety. Demos should be consistent with the intended learning outcomes. Experts recommend starting with simple problems or tasks that students already master and gradually adding more difficult tasks. As learning progresses, the teacher withdraws support so that students perform their own strategy known as scaffolding [7].

2) Convenience: Many teaching models indicate that learning is most beneficial if students solve real-world problems by building on past experiences, applying new knowledge and skills, and integrating them into everyday life [8-10] Since most learning takes place outside of the classroom, items such as team projects, readings, and homework help students apply the materials in a new context.

3) Motivation: Learning for the sake of learning motivates students who prefer a deep treatment approach, while those who prefer surface-processing approach respond to scores and external estimation. When exposed to new ideas and skills, most students will be intrinsically motivated if they feel connected, successful, and independent.

4) Creative thinking: According to learning theories, information comes packed in books and lectures, while knowledge is built as each student thinks critically about new information in terms of what is already known. The teaching of critical thinking strategies should not be limited to information gathering, comprehension, and productive thinking (reasoning, problem solving, and creative thinking) but also metacognition (thinking about an individual's thinking). Creative thinking includes looking at tasks in new ways, pushing the boundaries of one's knowledge, and developing his or her own evaluation criteria.

5) Appealing to a Group of Learners: When planning an exercise, teachers consider students' abilities so that everyone can master the goals and objectives. A variety of models attempt to define different learning styles, such as the Dunn and Dunn learning style inventory (teaching students through their individual learning styles), and the focus of Fischer and Fischer on student behaviors. Fleming and Mills' classification is based on sensory styles: visual, reading / writing, auditory, and kinesthetic [11, 12]. Consideration must be given to the needs of learners with disabilities and those with diverse backgrounds as well as short attention spans, multitasking, and social connectedness of today's students who have grown up with digital technology [13-15]. Therefore, the most effective teaching components identified in the educational literature were team-based courses that incorporate collaboration, critical thinking, and group discussion; reliance to visual communication and technology is appreciated as well. In the same context, the Association for Education in Journalism and Mass

Communication (AEJMC) as a specialized organization that aims to promote the highest standards of education in Journalism and Mass Communication, has identified patterns in teaching methods and factors aligned with best teaching practices in the mentioned fields[16-18]; Since 2000, the GIFT program (Teaching Awards in Journalism and Mass Communication Education), sponsored partially by the organization, has honored hundreds of ideas to recognize excellent standards in teaching related courses and to provide faculties with fresh ideas for creating or updating their lectures [19-21]. A number of criteria have been developed to evaluate methods of teaching mass communication and media studies in order to measure the quality of education in this field. In this context, teacher-oriented models, such as lectures, are usually criticized for not actively engaging students and not challenging them to think at high levels[22], while cooperative learning are appreciated for recalling more understanding than passive listening to lectures and memorizing materials[23, 24]. In addition to typical forms of student assessment, Classroom Assessment Techniques (CATS) are recognized to help students reflect on what they have learned and enable teachers to measure the success of exercises as the class progresses; besides, Classroom assessment projects are esteemed for their ability to target procedural learning for high-level thinking, conditional learning, and reflexive learning. Meanwhile, AEJMC award winning teaching methods and techniques has included active learning techniques such as class discussions, writing, assignments, lectures, presentations, and assigned readings. Due to the heavy reliance on discussion, lectures, reading and writing, most of the ideas seem to help digital learners[16, 25, 26]. This last statement suggests that the digital space, mainly DEL may be considered as a catalyst for teaching media and communication courses.

## **2.2. Distance online learning for TCMC**

Cognitive psychologists and academicians have identified a number of key strategies that enhance learning in many situations including the DOL environment[27-30]. The following DOL teaching strategies appear to suit communication and media courses:

- 1) Spacing learning opportunities over time: Every day short study sessions seem more suited to an effective learning style; This is especially important in distance courses, where communication and media students are often required to move through more work at their own pace (especially when preparing projects, documentaries, or research). In synchronous lectures or online group discussions, instructors are encouraged to repeat the most important concepts; spaced repetition helps consolidate information and store it in the student's memory.
- 2) Overlapping (means mixing of ideas): Students learn more when they can switch between different topics. Doing so helps students learn the similarities and differences between different ideas. During the "Theories of Communication" course, for example, students should be asked to compare ancient and new theories; This enriches their knowledge and makes them keep it longer. When engaging in online discussion boards, it is advisable to ask motivational questions that require students to integrate knowledge across topics.
- 3) Retrieval practice: It involves bringing information to mind from memory. At DOL, instructors can benefit from low-risk or no-bets repeat exams with course management systems. Some research shows that open book retrieval opportunities can be effective[31] and that multiple-choice questions can be written to be as effective in producing learning as short answers[32, 33]. Questions that require students to apply concepts to specific examples or identify components within an example are useful. Time should be limited so that students cannot search for everything or talk to each other while taking the test. Finally, instructors can write more questions and have the test pull randomly from the larger question bank so that not everyone gets the exact same question. Multiple tests must be scheduled for additional practice.
- 4) Concrete examples: Tangible information is easier to remember than abstract information, so concrete examples reinforce learning. Connecting clear examples to students helps them understand the basic abstract idea. Many concrete examples can be used in the lecture videos.
- 5) Elaboration: means asking questions about "how" and "why" on a specific topic. Trying to describe and explain how and why things work helps students understand and learn. Students can also explain how the topics relate to their private lives. This strategy promotes critical thinking. In the case of distance, students can take advantage of the detail in online discussion boards or in virtual groups via video chat.
- 6) Dual coding: It is related to combining the verbal representation of information (words) with the visual representation of information (pictures / graphs), to understand the information presented. Dual coding can be implemented in online video lectures by providing on-screen visuals and expressive textures. It is advisable to avoid cognitive overload and slowdown while all aspects are explained; Teachers can also pause the video and ask students to try to explain it aloud to themselves with the images on the screen; They can also encourage

students to pause and rewind when confused as well. This technique is suitable for the “Documentary film” course, where one of the CLOs states that at the end of the course, the student should be able to critique the films as a professional. It should be highlighted that in DEL scenarios, students have more control over their learning; this requires flexibility on the part of instructors, and adjustments can be made so that students receive instruction in appropriate pedagogical methods.

### **2.3. Theoretical approaches for understanding methods for TCMC**

Scholars pointed out three major theoretical approaches illuminating a path to understanding effective teaching in journalism and mass communication: behavioral, cognitive, and constructive. Behaviorism includes acquiring a new behavior through repeated responses and immediate reinforcement, such as testing. Cognitive impairment focuses on the quality of processing information that affects memory and recall. In constructivist theory, the teacher acts as a facilitator who encourages students to discover principles and build new knowledge for themselves by solving relevant real-world problems [34] and learning from one another in a social context [35]. Teaching scholars recommend this. Teaching exercises include elements of all three theories, with an emphasis on the constructivist approach. The first step in planning the exercise is to define what students are expected to learn - goals and objectives. Bloom's common classification classifies educational goals in a hierarchy from simple and concrete like knowledge, understanding, and application, to complex and abstract such as analysis, synthesis, and evaluation [36]. A study or small group or hybrid activity is the most effective way to present the material. Teaching models move along a continuum from top-down direct models (teacher centered) to ascending inquiry models (student with the teacher acting as a mentor), with peer education in the middle [37].

#### **2.3.1. Experiences regarding online TCMC**

Although it is still considered relatively a novelty, online teaching has been the subject of extensive research. The technological infrastructure of online education is not so much the subject matter of this research as much as the human resources infrastructure; Dimitrios Belias et. al.[38] have undertaken a comparative investigation between traditional learning methods versus the use of new technologies in teaching accounting and related disciplines[38]. It follows a student-centered method; the results are intriguing because students claim that they still prefer teacher-centered methods despite the availability of various other, more advanced methods, and prefer high-tech methods such as online teaching as auxiliaries that support and enhance the traditional method rather than the independent primary methods. Syed Nur ul Amin’s meta-study focuses primarily on the literature related to the effects of different online education methods on the learning environment, learning outcomes, education accessibility, and scholastic performance; the findings confirmed the enhancement of ICTs to online distance learning experiences as a whole. Johannes Koneig Et al [39] followed a teachers-centered approach wherein they focused on the role of teachers’ competence, education, skills, in their ability or inability to adapt to online education; results report that the technological infrastructure is not the only culprit; it appears that a mixture of lack of training in the use of online education along with a lingering skepticism regarding the pedagogical utility of online ed are the leading factors behind this discrepancy in figures. According to a brief released by the UNESCO in January 2021 on the effects on online education on students, DOL can have a positive impact on students; however, authors insist that the results should be taken with a grain of salt due to the effect of technological disparities between countries on the online education experience. Similarly, the study points out that in multilingual countries, students from minority language groups may face significant limitations in finding access to online education resources in their mother tongue. To sum up, the literature detected several effective teaching methods and online strategies for Teaching Communication and Media Courses (TCMC), and indicates that the cooperative is the cornerstone of Distance Online Education; the most effective components of teaching are group training courses such as creative thinking; the reliance on visual communication and technology was esteemed as well. As per the major theoretical approaches to understanding effective TCMC, the literature cited: Behavioral, cognitive, and constructive, and authors confirm that teaching experiences include elements of all three theories, with a prominence on the constructivist approach, stating that Blooms taxonomy remains a guide for all teaching aspects. With regard to distance teaching experiences, some relatively old studies that compared traditional learning methods versus the use of new technologies in teaching revealed that students wary of new methods of teaching in the virtual environment as they prefer high-tech methods only as aids that support their education. Some recent descriptive studies have focused on the effects of online teaching methods on the learning environment, learning outcomes, access to education, and school performance; they confirmed that ICTs enhance the quality and accessibility of education, smoothly and

flexibly, and stimulate learning and school performance. Nevertheless, factors that have limited the prevalence of DOL in some countries are the lack of financial and technical capabilities, as well as trainings in the use of the learning management system, with continuing doubts about the educational usefulness of online education. After it was imposed by the Coronavirus pandemic, there are still problems regarding the suitability of the DOL for some specialties and some applied and practical courses. This research will focus on the impact of using DOL in a particular discipline: Communication and media studies.

### **3. Research problem**

This study investigates university professors' perceptions of Information and Communication Technology (ICT) usage while teaching online Communication and Media courses and explores their attitudes on its impact on the Teaching and Learning Process (TLP) in the mentioned field.

#### **3.1. Research questions**

The study requires answers from faculties' perspective to the following research questions:

- RQ1. What are the effects of DOL on Communication and media courses' syllabi structure?
- RQ2. How does DOL influence the overall Teaching and learning strategies in Communication and Media courses?
- RQ3. What is the effect of DOL on the assessment tools and measurement of Learning outcomes (LOs) of Communication and Media courses?

#### **3.2. Research objectives**

The study aims to achieve the following:

- Contributing to the development of teaching methods for Communication and Media courses in universities of the Arab region;
- Measuring the degree of relevance of cooperative teaching methods supported by the use of digital technologies, to the nature of the aforementioned field's courses;
- Monitoring the most important issues raised in the Arab world regarding modern methods of learning and teaching and trying to find appropriate solutions to them;
- Tracking the perceptions and attitudes of Communication and Media professors in the Arab region regarding the experience of Distance Online Learning and future manifestations.

#### **3.3. Theoretical framework**

This study will be guided by the Construction approaches, mainly, the Social Constructivism Theory. The learning process according to *Constructivism* approaches arises based on "deduction" based on ICT and cooperative learning strategies usage, so that learners participate in formulating goals and reaching their achievement based on their needs, preferences and the needs of society, with absolute belief in the different abilities, tendencies and interests of each student. The evaluation process can take place individually and as a group[40]. In[41], summarize the constructivist approach as being the one that provides a 'rich environment for learning'. It is characterized by five principles:

- Authentic assessment, to test the achievement of educational objectives;
- Student responsibility and initiative participation;
- Learning strategies that support exploration and knowledge building;
- Authentic Learning contexts take into account students' individual differences;
- Co-operative support.

The Social constructivism was founded on the ideas of Joan Solomon who emphasizes the importance of group learning so that the roles of instructors, parents, peers, and other members of society are shared with the role of the individual learner, so that learning becomes an active social process in which the instructor plays the role of a facilitator and a debater and possibly the Delegator. From this angle, structuralism looked at technology as an important mediator that provides the appropriate environment for social interaction between learners amid multiple options in which the learner / group of learners can choose to study a specific concept from the list of choices and indexes at a specific time using the available instructions about this concept and examples supporting it [42]. This trend has grown especially after the qualitative transformation of e-learning from being a mere learning management system to a window that provides the various resources necessary for choosing,

designing and performing activities based on problem solving, self-control and cooperation with others using social media platforms, within the growing concept of the “Information Society”. The social constructivism has provided an appropriate environment for the learner in which he can form and configure his information through the self-learning platform. Parallel to this comes E-learning that contains some traditional applications, such as PowerPoint presentations, which do not have a significant impact on teaching and learning strategies and their management process, while the impact of Virtual Learning Environments (VLEs) and Managed Learning Environments (MLEs) has a substantial influence on all elements of the learning and management process[43]. Structuralism has adopted the approach of creating knowledge (not just exchanging it) through the active and cooperative participation of students, whereby there is a "negotiation" about the content and context of knowledge, so that each learner can create or build his own cognitive memory and integrate it with his previous experiences. It also relied on many mechanisms to stimulate and encourage learners' participation in e-learning environments[44]. Thus, e-learning is no longer just a medium for the transfer of knowledge, but has become a field for it. Dealing with it requires many skills, qualitative competencies and trends of education planners, decision makers, teachers and learners[45]. Constructivist approaches focus on the necessity of participatory and interactive learning in the context of the digital space. This means that curricula and methods of teaching the course must be reconstructed for communication and media programs, in a way that allows for more interactive and collaborative methods in order to be suitable for the digital space that has been recently imposed as an incubator for the education process. During the second part of this research, the authors will trace participants' attitudes toward the relevance of this statement; The main objective is to determine the effectiveness of the interactive and cooperative method in teaching communication and media courses.

### 3.4. Research method

A qualitative analysis based on semi-structured interviews is adopted to address the research questions. The authors believe that the data collected from the open-ended questions included in the interview guide are able to provide them with in-depth answers about university professors' perceptions and attitudes regarding the use of ICTs and the online environment in Communication and Media Courses (CMC). Thus, the DOL experience of participants who teach Communication and Media in Arab universities will be traced, as well as their views on its impact on the teaching process, especially Curricula, Teaching Methods and Assessment tools design.

#### 3.4.1. Sampling and procedures

Electronic Semi-Structured Interviews were conducted with 50 university professors affiliated on Colleges of Communication and Media Studies in the Arab region (via Messenger, instant chatting, blogs...etc.) from March to June 2021. To suit the participants, interviews were conducted in either Arabic or English. Then the Arabic answers were translated into English, and the results were collected in a table with three columns, each regrouping the answer to one of the research questions. Results were analyzed manually because of the quantitative nature of the study; each interview can include unique and deep answers; Therefore, responses were analyzed one by one and then regrouped on themes according to their tendencies: Convergence or dissonance between the answers, as well as the main points raised in each theme. The sample included 68 faculty members from 19 Arab universities, located in 8 Arab countries as shown in Table 1. Nearly a third of the participating volunteers (29.41%) belong to Emirati universities, while 14.70% are Egyptians and 11.72% are from Saudi Arabia.

**Tab.1** Sample's profile

University	Country	Nber	%
University of Sharjah	UAE	20	29.41
Ajman University			
Emirates College of Technology			
Al Falah university			
American University in the Emirates			
Benha University	KSA	8	11.72
Umm Al Qura University			
King Abdul Aziz University			
University Al Imam			
King Saoud University			
Suez University	Egypt	10	14.70

Al-Azhar University				
Al-Ahram Canadian University				
Al-Khaleej University	Bahrain	1	1.47	
Baghdad University	Iraq	7	10.25	
Arabic Open University	Kuwait	4	5.85	
Sudan University for science and technology	Sudan	5	7.30	
Mannouba University	Tunisia	6	8.81	
University of Algeria	Algeria	7	10.49	
<b>Total</b>		<b>19</b>	<b>8</b>	<b>68</b>
			<b>100</b>	

### 3.4.2. Research findings

#### 3.4.2.1. DOL effects on syllabi structure of communication and media courses (RQ1)

The majority of participants agreed that curriculum modifications are important and necessary. The answers ranged from those who asserted that the change process was underway and required complex procedures and approvals from stakeholders, to those who declared that modifications had been made since the start of distance teaching. Several participants explained that a review of the Course Learning Outcomes (CLOs) as well as the structure of Communication and Media Syllabi is in process. A faculty from the University of Algeria mentioned: "A complete review process was launched for all course descriptions at the College of Media, in order to amend some outputs and teaching methods in line with the electronic space". In the meantime, a participant from the American University of the Emirates (UAE) elucidates that "there is a need to change the descriptions at the level of outputs and measuring tools; but I think that the fluctuations that have been made are not enough and have to be reviewed again". He added that "it is usually the task of the course coordinators, and it requires the approval of the department head and the deanship; these procedures take time, but in the end the result will be in favor of the educational process". Another participant from the Emirates College of Technology in Abu Dhabi (UAE), guaranteed that "All descriptions of all teaching courses have been modified since the first week in distance education due to Corona pandemic and the lockdown measurements, and the intensive meetings of the faculty members focused on assessment methods in accordance with the issued decisions of the Ministry. Periodically and accordingly, care is taken within the established standards". Regarding the most important modifications that were adopted, they appear to be diverse, including teaching methods, assignments, and exams. A participant from the University of Sharjah (UOS) enlightens: "Yes, the curriculum has already been modified to accommodate distance learning, whereby the following have been modified: Homework and assignments so that their completion and delivery are consistent with the nature of the digital platforms used to receive, submit and display assignments; the course outputs have also been modified to suit the skills that the student must acquire in dealing with digital platforms professionally and working remotely in the future; the grades' distribution is now convenient for online exams, pools, and online class participation." He added, "Among the most important courses whose description has been modified are practical courses such as Media Materials Production 1 and 2, Online Public Relations, and Writing for Public Relations". When asked what he thought of the modifications that occurred, the faculty involved in this study claimed that, in his view, "the modifications were appropriate, because they were compatible with the peculiarities of distance learning, the digital platforms used, the online application, the assessments, and the teaching methods used in the online education ". A minority of participants expressed a different judgement, considering such revisions called "unnecessary"; a participant from King Saud University (KSA) clarifies: " In my opinion, modifying the courses or descriptions is not very important because the teaching process is one, although the presentation and discussion of visual material added a better practical dimension to the student; but it is possible to add other courses in the study plan that keep pace with the technological and virtual world, especially since the process of changing study plans takes place during accreditation processes every four years, which means preparing the current variables and adding new courses that are in line with the spirit of the coming period". A participant from Ajman University agreed this opinion: "The Blackboard app helped design courses with their basic description without having to re-structure or fundamentally change the description; There is a diversity of course views, discussion, and evaluation, so there is no need to adjust syllabuses".

In the same context, a participant from Mannouba University (Tunisia) expressed his opinion with more details: "The distance education experience did not turn into an independent educational system with its beginning and end, but rather it remained a pedagogical haven whenever the health situation in the country deteriorated. As

for the courses and plans, as far as I know, there has been no change in the level of outlines of the courses and specializations; But there was a reliance on visual content (intensive recorded videos, infographics, PowerPoint). At the level of output and acquisitions, the attention has become as much focused as possible on understanding and the ability to critique, rather than on-field application. For example, in the subject of Press Report and Press Report, the examination is conducted either on topics that can be completed online remotely or to provide press samples found in the media landscape, and the student presents their criticisms to them papery". To summarize, it should be noted that the majority of participants suggested the need to modify CMC' descriptions; Arab universities seemed diverse in terms of the measures that were taken and the steps they appropriated to propose, adopt, and implement the amendments on the ground. However, a numerical minority of the participants expressed the lack of need for radical modifications in the course description, since the change occurred only in the level of teaching methods, which became distance learning and not in the essence of the educational content. Therefore, the use of communication technologies, mainly learning management systems, is good in times of crises and pandemics, but this does not mean that the existing systems will be disturbed, as it is possible to teach according to the current descriptions. Accordingly, to answer the first Research Question (RQ1): How does online distance learning affect the syllabi structure? It can be alleged that according to participants, the modifications included the objectives and learning outcomes of the courses. New approaches of teaching, examination and assessment have also been incorporated. Participants insisted that the opportunities offered by learning management systems and even social media have been exploited to deliver Media and Communication lectures that encourage interaction and teamwork. In the meantime, diversification of task-related models was required even in theoretical courses (writing, audio, video, animation... etc.) to make online courses more attractive; The online test is incorporated as an official assessment tool into the course description (Syllabus), which requires consideration of the question structure provided by the LMS platforms.

#### **3.4.2.2. DOL effects on communication and media courses' overall teaching and learning strategies (RQ2)**

According to participants, teaching and learning strategies have been positively influenced by DOL; the way instructors deliver their lectures and stimulate students' interaction has changed dramatically since the adoption of online teaching operations, and new methods have emerged. Besides, they stated that the shared space works well for them and for students as well. For instance, several new teaching methods have also been adopted at the College of Communication at the University of Sharjah (UAE); a participant from the Public Relations department stated that he uses a number of strategies such as flipped classroom and collaborative learning; he revealed that the interaction tools provided by the Blackboard app have been utilized regularly, such as creating blogs and online discussion forms. He added, "in practical subjects, students were trained to produce and implement projects remotely, such as: Producing mobile films, and creating and managing training accounts for social media." Another participant from the Mass Communication Department of the same university explained: "I begin the course with a small review of what was presented in the previous session in an exhilarating way, using gaming tools such as "Kahoot" or "Quizzes", intend to engage students in online discussions while introducing theoretical material to ensure they are awakened, and conclude the session by summarizing the content presented and opening up space for questions and answers for 10 minutes, to make sure they understood everything". She emphasized the importance of collaborative learning as a more appropriate strategy in an online environment: "I try to develop relationships with students to make them feel "in a real classroom". I think that's what all instructors and students want as well". Almost the same opinion was shared by a participant from Al-Khaleej University (Bahrain); he explained that "institutions offering online learning must translate the traditional classroom space into an online collaborative space based on the lecture requirements". A respondent from the University of Algeria stressed the creative aspect of new teaching strategies as well as the richness of the virtual setting: "The traditional teaching methods and strategies have been changed by creating an interactive learning atmosphere full of vitality. The Internet helps interactive and cooperative learning due to the abundance of information in it; it helps also to provide more than one method of teaching, as it is a large library in which a variety of books is available, as well as educational documentaries videos".

A participant from Umm Al-Qura University (SKU) valued the opportunities of virtual space in education; he mentioned that "there is an effective use of virtual classes in teaching; student feedback is obtained in a flexible, easy and fast way; the educational platforms enhance interactivity and makes it easy to apply new teaching strategies such as flipped classrooms". Concerning the platforms used, the participant from Al-Ahram Canadian University (Egypt) stated that he uses a set of integrated platforms to conduct teaching and evaluation remotely:



“Google Classroom and Zoom are used for live sessions lectures by sharing the teacher's screen with students and developing tutorials, then giving some simple exercises and opening discussions in the lecture. Besides, educational recorded videos on methods of using graphic software are used in the visual communication section; digital books and research papers are also provided for each course separately”. Remote lessons are provided in a synchronous and asynchronous manner; in addition to live streaming lectures, through Learning Management Systems (LMS) such as Blackboard and Moodle, some instructors record their lessons and upload them to the LMS, to be consulted by students at any time; The educational materials are designed in different formats such as PowerPoint slides, YouTube videos, and useful links. A participant from Emirates College of technology at Abu Dhabi (UAE) said in this regard: “We are constantly updating educational materials such as integrating multimedia links and using special programs according to the requirements of practical programs such as design and montage”. The same process is adopted in other higher education institutions in Dubai; a respondent from al Falah university explained: “As for the applied courses, the lectures are usually recorded and put at the students' disposal in Blackboard to watch as much time as they want; Tutorials are also videotaped and uploaded to Blackboard to help students master the basics of the editing process as well as video shooting techniques”. A Tunisian faculty member, who works at the Institute of Press and Information Sciences (IPSI), and is involved in this study, described his collaborative pedagogical method of teaching some practical courses in Journalism department: “Personally, I have given many practical lessons on the Google Meet platform, such as "Written Journalism Workshop", "Opinion Journalism" and "Investigative Journalism"; I have endeavored to present my lessons through illustrations and drawings, alternating information, and examples with great focus; I often use the chat icon to give lectures and at the same time I edit the information that students have to write down; I regularly leave them space to interact through this icon for questions and inquiries”. Another participant teaching “Public Relations Campaign” course, from King Abdul-Aziz University (KSA) mentioned that “work is transformed into workshops rather than a regular online lecture, so students can work collectively, give oral presentations, and participate in focus group discussions”. Although a great number of participants expressed his enthusiasm for the development of new educational methods suitable for distance education, a minority spoke of some problems that prevented integration into the virtual space and the provision of distance lessons on a regular basis, which prevented the renewal and enrichment of teaching methods. A faculty member from Sudan University of Science and Technology claimed that his college does not employ the best technical opportunities; he explained the reasons: “There is a high cost for distance education, especially the price of subscription to Learning Management Systems; there is also a shortage of equipment for all students and a high illiteracy rate in Sudan in terms of smart technologies”. Given the aforementioned circumstances, the participant states: “The quality of the lessons does not differ much in its content and form from what is presented in the traditional class: slides and oral lectures are sufficient due to the inability of the faculty members to use modern technologies”. This view was put forward by some other participants from Al-Azhar University, Suez University (Egypt) and Iraq University (Iraq). In fact, to ensure the sustainability of education during the coronavirus pandemic, and due to their inability to offer online teaching using LMS services, many Arab colleges and universities have turned to social networking sites; several participants mentioned providing their students with the necessary knowledge, by creating groups on social media to post academic materials, share educational links, and manage group discussions. One of the respondents from Al-Azhar University explains: “Social media is used to sustain teaching, especially WhatsApp. There is a weakness in providing technical support to faculty members; Internet fees are very expensive, and this does not allow the use of platforms.” The high expenditures of the Learning Management System (LMS), and the weak Internet flow rate in some Arab countries led to the inability of their universities to provide advanced services in online distance education. Consequently, there were no major changes related to teaching methods in them. A participant from IPSI confirms this situation: “Tunisia has not yet transformed into an integrated and coherent distance education system.” Thus, to answer the second research question related to the effects of distance e-learning on teaching methods, it should be emphasized that participants indicated the need to consider the diversity of media that teachers can invest during online teaching: documents, books, online slides (such as SlideShare), videos (especially in YouTube), educational sites, discussion boards, images, infographics, live chats, etc., emphasizing the importance of using these opportunities creatively in the online lecture. The new teaching methods developed by the participants with the onset of the distance teaching experience can be summarized in: The intensification of online discussions, the replacement of audio-visual projects typically produced in studios, in traditional environments, with audio and visual files, such as video interviews, short films, or photo albums using smartphones; replacing many practical lectures with student-activated workshops; and using online games (Kahoot, exams...etc), in lecture review; Participants ultimately stressed that students' daily uses of virtual space are different from what

they are supposed to be in a formal education setting (for example language and etiquette used in online discussions with friends), and thus a reshaping of the way students communicate online is required. It should be noted in this context that part of the Arab universities did not make significant changes in teaching methods because the technical capabilities do not allow the introduction of learning management systems and the adoption of paid educational platforms. Thus, the innovation that occurred in these universities is mainly summarized in strengthening the cooperative aspect through the adoption of social media groups for discussions and dissemination of lessons.

### 3.4.2.3. DOL effects on communication and media courses' assessment tools (RQ3)

In the traditional setting, the final score consists of 40% courses and 60% exams. This is how communication and media courses in Arab colleges are generally designed in terms of COL assessment and measurement. With the transition to the online environment, the big question that has been raised over the past two years is about the efficiency of this test method as well as the style of test questions. Is it still effective? Is it relevant to the DOL environment? etc. As a matter of fact, when talking about the effects of online distance learning on assessment tools, it is necessary first to address the platforms that participants use to take tests, measure CL, and determine how these technological tools have changed the way students are assessed. A faculty member from the Emirates College of Technology Abu Dhabi participating in this study explained: "The tasks have changed due to the use of Moodle as a distance learning platform. In the "Research Methods" course, students are now required to form problems and hypotheses after being provided with titles of research topics, to prepare a research plan Designing and distributing questionnaires via Google Docs This enhances their research skills. For the "Photography" course, students are given the task of producing short films using their mobile phones. Therefore, all the tasks of a traditional theoretical nature were transformed into student-produced projects and presented for discussion online ". Examinations at the College of Media at the Arab Open University take the form of research. For theoretical courses, special links for the exam are designed and placed at the disposal of students for a specified period. In the meantime, faculties in the College of Media at Al-Ahram Canadian University use a range of distance assessment strategies to ensure the development of student performance and achievement of learning outcomes. Google Quiz app. was adopted in written exams due to its ease of use and instant access to the exam score while online oral examinations are conducted by Zoom Meeting. A participant from the mentioned Egyptian Canadian University explains that "projects and assignments are usually received electronically such as graphic designs, short videos and media materials for awareness campaigns; graduation projects have also been expanded to include magazines, websites and electronic applications". As for the questions included in online exams, they differ from those designed in the time of traditional education. A participant from Umm Al-Qura University comments that distance education has a good effect in increasing the academic achievement of students because his university has adopted research and editing tasks as assessment tools; students are encouraged to use search engines to collect, paraphrase, and present information in group presentations or mini-symposia. At the Algerian university, duties ranged from research, individual assignments, to group projects completed and uploaded to the platform. A participant from the University of Sharjah describes the way he rates his students as follows: "I generally rely on four types of online questions: true or false questions, multiple-choice questions, short answer questions and essays; exams are designed with time in mind. It is based on with a set of strategies: Questions that require good memory, combined with others that require deep understanding, analysis and criticism. The questions range from easy, medium to difficult. It is a method that enables us to sort the good students from the students with weak and medium levels".

Another respondent from Ajman University added: "Assessment methods tend to be more objective with the distance education system, and the primary purpose of them always remains to measure the student's ability to understand the material, by testing his skills in (synthesis, analysis, planning, interpretation. and conclusion. Therefore, the spirit, goals and objectives of the exams have not changed, but only their form, which has become more suitable for the virtual environment. The same statement was raised up by respondents from KSU University and Abdul Aziz University (KSA). A very interesting point made by one of the participants from Al-Imam University (Saudi Arabia) related to cheating in online exams; he emphasized that many measures have been taken to reduce cheating such as disabling backtracking bottom as well as randomizing questions. According to many participants, the majority of universities using LMS in the Arab countries resort to these solutions to reduce cheating. In the same context, another participant stated:" *in the University of Sharjah, students are obliged to use a second camera (via Zoom or Microsoft Teams) in addition to the one included in the LockDown Browser*". According to many participants, Respondus LockDown Browser alone is not enough

to secure the testing environment within a learning management system; Although it is used by a great number of institutions of higher education in the world to secure exams online, there are ways to bypass the browser easily. For such challenges, many colleges, according to the participant from Abdul-Aziz University, lower the online exam score to 20%. He explained: "In return, I raised the grades of the year's work in terms of research, assignments and class discussions, which are duties calculated in each session throughout the semester, which ensures the continuity of student performance improvement." A participant from Central University (Tunisia) draw attention to the fact that there is are students who are not proficient in writing on the computer or spend a long time writing, so "it is better to give them an assessment based on critical thinking skills without restrictions in place or time as it is presented to the student with a period of one week or more to prepare", he said. It should be noted at the end of this section that some participants affirmed the resistance of some universities in the Arab world that did not commit to trying the exam remotely, such as IPSI, Suez University, Baghdad University and Sudan University. This is due to several factors: In addition to deprived infrastructure and frequent internet outages, online tests based on true or false, multiple choice and short answer questions are considered poor method by some Arab professors, do not live up to the level of university students and reduce the reliability of outcome measures, which disturbs the quality. Thus, the effectiveness of cognitive achievement, and assessments in distance online education in some Arab universities is still questionable. To answer the RQ3 on DOL effects on Communication and Media courses' assessment Tools, it can be accentuated that a number of distance assessment strategies are activated by a number of Arab universities. True or False, Multiple Choice, Short Answer, and Essay questions are designed with time in mind; they are all new forms that vary from paper-based examination questions. Consideration was given to diversifying the questions' levels in terms of difficulty; examinations also include questions requiring good memory and others that necessitate deep understanding, analysis and criticism. As per the attitude of the participants related to the process of measuring output remotely, there is a consensus that the objectives of the tests have not changed, but only their form that has become more suitable for the virtual environment. To reduce cheating, respondent professed that several measures have been taken, such as disabling undo from the bottom, selecting random questions, and using a second camera next to the Lockdown browser screen.

#### 4. Discussions

Findings showed that new approaches of teaching, examination and assessment have been incorporated. Participants insisted that the opportunities offered by learning management systems and even social media have been exploited to deliver Media and Communication lectures that encourage interaction and teamwork; new teaching methods developed by the participants with the onset of the distance teaching experience such as intensifying online discussions, replacing many practical lectures with student-activated workshops; and using online games (Kahoot, exams...etc.), in lecture review; respondents have insisted on investing the online sources, emphasizing the importance of using these opportunities creatively in the online lecture. This is line with what was found in the literature as the most effective teaching components identified were team-based courses that incorporate collaboration, critical thinking, group discussion; and rely on visual communication and technology [13]. Furthermore, methods adopted by the participants and applied in a number of Arab universities are similar to the criteria established by the AEJMC Award for evaluating methods of teaching communication and media studies, where teacher-oriented models are usually criticized for not actively engaging students and not challenging them to think at high levels[23, 22], while cooperative learning is appreciated and encouraged. AEJMC's award-winning teaching methods and techniques have included active learning techniques such as class discussions, writing, assignments, lectures, presentations, and personal readings. A set of distance assessment strategies have been adopted by a number of Arab universities, especially in the gulf region, to ensure the development of student performance and the achievement of learning outcomes. Participants mentioned that online exam questions differ from those designed within a paper-based exam; True or false questions, multiple-choice questions, short answer questions and essay questions are designed with time in mind. These types of questions are designed based on a set of strategies: Questions that require good memory, combined with others that require deep understanding, analysis and criticism. The mentioned type of questions is considered by a few Arab professors participating in this study as a poor method that does not rise to the level of university students. The participants considered that the spirit, goals and objectives of the exams did not change, but only their form that became more suitable for the virtual environment; they also confirmed that several measures have been taken to reduce cheating such as disabling undo bottoming, selecting random questions, and using a second camera alongside the Lockdown browser screen. It should be highlighted that the

assessment tools disclosed and the type of questions are in line with what many academics have considered as key strategies for enhancing learning in a DOL environment[29, 27, 28]. Some studies show that multiple-choice questions can be as effective in producing learning as short answers[32, 33]. In the same context, it must be highlighted that the use of remote exams was not unanimously an option for all participants. Rather, there are several circumstances that prevented some Arab universities from taking these exams, including the poor infrastructure and communications network, as well as the opinion of some respondents who consider the nature of Communication and Media courses do not fit with the cited online questions (QCM mainly), so the exams were replaced in some Arab Colleges of Communication with essay assignments, presentations and practical projects. This group of respondents calls on the need to return to study in campus and to paper-based exams as soon as the Corona pandemic ends. These results are very close to those of Dimitrios Belias et al.[38] who found that students still prefer teacher-centered methods despite the availability of various other, more advanced methods, and prefer online teaching methods as aids that support and enhance the traditional method. Johannes König et al. [46] spoke of the lack of ICT training coupled with persistent doubts about the pedagogical usefulness of distance education; the brief released by UNESCO in January 2021 noted the impact of technological disparities between countries on the online education experience as well.

## 5. Conclusion

The spirit of the Constructivist approach emerges through the research results, where modern communication technologies appear as an incubator for a new type of education based on participatory, interactive, and joint work, and where the features of the instructor change to an online session moderator and supervisor. The tools used to measure the achievement of CLOs have also been modified and news strategies came in, such as online gaming. These changes applied to CMC in many universities in the Arab region to adapt to DOL were met with caution by a small number of participants: Although they are aware of the role of the LMS in promoting an active learning, they still argue that CMC requires a specific type of assessment that focuses on students' writing capacities, critical and creative abilities, which can only be achieved through paper-based exams that include essay and research questions, as well as projects of a creative nature; in the same context, they insist that audio-visual production remains relevant only when using studio and professional equipment not smart phones. This disparity in attitudes and opinions masks deeper differences related to the context in which each participant lives. This invites to talk about the gap seen between the Arab countries: while Gulf region has witnessed progress in infrastructure and technology facilities that enabled them to adapt quickly and smoothly to the requirements of DOL, Maghreb and some Arab Eastern countries such as Algeria and Sudan still suffer from weakness of the telecommunications network; these contexts influenced some respondents in terms of adapting TIC in education: The cautious and sometimes skeptical view of the effectiveness of DOL use in CMC has remained. The central question of the upcoming research deals with the development of attitudes after deepening the experience through the hybrid education system after the Corona pandemic in a number of Arab universities.

## Acknowledgement

The authors extend their appreciation to the Deanship of Scientific Research at King Saud University for funding this work through research group no (RG-1441-544).

## References

- [1] A. García-Milon, C. Olarte-Pascual, and E. J. T. M. Juaneda-Ayensa, "Assessing the moderating effect of COVID-19 on intention to use smartphones on the tourist shopping journey," *Tourism Management*, vol. 87, p. 104361, 2021.
- [2] A. S. H. Rihab Salah Khairy, and H. Salim, "The Detection of Counterfeit Banknotes Using Ensemble Learning Techniques of AdaBoost and Voting," *International Journal of Intelligent Engineering and Systems*, vol. 14, no. 1, pp. 326-339, 2021.
- [3] N. A. jassim. and H. Alrikabi, "Design and Implementation of Smart City Applications Based on the Internet of Things," *iJIM*, vol. 15, no. 3, 2021.

- [4] D. Al-Malah, H. Th , and H. A. Mutar, "Cloud Computing and its Impact on Online Education," IOP Conference Series: Materials Science and Engineering, vol. 1094, p. 012024, 2021.
- [5] L. F. Jawad. B. H. Majeed, and H. ALRikabi, "Tactical Thinking and its Relationship with Solving Mathematical Problems Among Mathematics Department Students," International Journal of Emerging Technologies in Learning (iJET), vol. 16, no. 9, 2021.
- [6] G. Kassymova, A. Akhmetova, M. Baibekova, A. Kalniyazova, B. Mazhinov, and S. Mussina, "E-Learning environments and problem-based learning," International Journal of Advanced Science and Technology, vol. 29, no. 7, pp. 346-356, 2020.
- [7] A. Abdala, and A. Hamdan, "Scaffolding Strategy and Customized Instruction Efficiency in Teaching English as a Foreign Language in the Context of Saudi Arabia," Journal of Literature, Languages and Linguistics, vol. 77, 2021.
- [8] A. V. Iatsyshyn, V. O. Kovach, V. O. Lyubchak, Y. O. Zuban, A. G. Piven, O. M. Sokolyuk, A. V. Iatsyshyn, O. O. Popov, V. O. Artemchuk, and M. P. Shyshkina, "Application of augmented reality technologies for education projects preparation," 2020.
- [9] B. H. Majeed, L. F. Jawad, and S. Haider "The Impact of CATs on Mathematical Thinking and Logical Thinking Among Fourth-Class Scientific Students," International Journal of Emerging Technologies in Learning (iJET), vol. 16, no. 10, 2021.
- [10] A. Ghazi, S. Aljunid, S. Z. S. Idrus, A. Fareed, A. Al-dawoodi, Z. Hasan, R. Endut, N. Ali, A. H. Mohsin, and S. Abdullah, "Hybrid Dy-NFIS & RLS equalization for ZCC code in optical-CDMA over multi-mode optical fiber," Periodicals of Engineering and Natural Sciences, vol. 9, no. 1, pp. 253-276, 2021.
- [11] M. Leasa, A. D. Corebima, and J. Batlolona, "The effect of learning styles on the critical thinking skills in natural science learning of elementary school students," Ilkogretim Online, vol. 19, no. 4, 2020.
- [12] A. Ghazi, S. Aljunid, S. Z. S. Idrus, C. Rashidi, A. Al-dawoodi, B. A. Mahmood, A. Fareed, M. U. Zaenal, N. H. Qasim, and R. M. Rafeeq, "A Systematic review of Multi-Mode Fiber based on Dimensional Code in Optical-CDMA," in Journal of Physics: Conference Series, 2021, vol. 1860, no. 1, p. 012016: IOP Publishing.
- [13] C. B. Schwalbe, "Leveraging the digital media habits of the millennials: Strategies for teaching journalism courses," Southwestern Mass Communication Journal, vol. 25, no. 1, 2009.
- [14] A. Alaidi, O. Yahya, and H. Alrikabi, "Using Modern Education Technique in Wasit University," International Journal of Interactive Mobile Technologies, vol. 14, no. 6, pp. 82-94, 2020.
- [15] H. T. S. ALRikabi, A. H. M. Alaidi, and F. T. Abed, "Attendance System Design And Implementation Based On Radio Frequency Identification (RFID) And Arduino," Journal of Advanced Research in Dynamical Control Systems, vol. 10, no. SI4, pp. 1342-1347, 2018.
- [16] D. Cuillier, C. B. J. J. Schwalbe, and M. C. Educator, "GIFTed teaching: A content analysis of 253 great ideas for teaching awards in journalism and mass communication education," Journalism & Mass Communication Educator, vol. 65, no. 1, pp. 21-39, 2010.
- [17] D. Abdul-Rahman Al-Malah, H. Salim, "Enhancement of educational services by using the internet of things applications for talent and intelligent schools," Periodicals of Engineering and Natural Sciences (PEN), vol. 8, no. 4, pp. 2358-2366, 2020.
- [18] A. Ghazi, S. Aljunid, A. Fareed, S. Z. S. Idrus, C. M. Rashidi, A. Al-dawoodi, and A. M. Fakhrudeen, "Performance Analysis of ZCC-Optical-CDMA over SMF for Fiber-To-The-Home Access Network," in Journal of Physics: Conference Series, 2020, vol. 1529, no. 2, p. 022013: IOP Publishing.
- [19] B. McLaughlin, M. R. Gotlieb, and R. Cummins, 2018 Survey of Journalism & Mass Communication Enrollments," Journalism & Mass Communication Educator , vol. 75, no. 1, pp. 131-143, 2020.
- [20] N. S. Alseelawi, E. K. Adnan, H. T. Hazim, H. Alrikabi, and K. Nasser, "Design and Implementation of an E-learning Platform Using N-Tier Architecture," international Journal of Interactive Mobile Technologies, vol. 14, no. 6, pp. 171-185, 2020.
- [21] A. Al-Dawoodi, H. MARAHA, S. ALSHWANI, A. GHAZI, A. M. FAKHRUDEEN, S. ALJUNID, S. Z. S. IDRUS, A. A. MAJEED, and K. AMEEN, "Investigation of 8 x 5 Gb/s mode division multiplexing-fso system under different weather condition," Journal of Engineering Science and Technology, vol. 14, no. 2, pp. 674-681, 2019.
- [22] S. D. Brookfield, *Becoming a critically reflective teacher*. John Wiley & Sons, 2017.

- [23] C. E. Hmelo-Silver, R. G. Duncan, and C. Chinn, "Scaffolding and achievement in problem-based and inquiry learning: a response to Kirschner, Sweller, and," *Educational psychologist*, vol. 42, no. 2, pp. 99-107, 2007.
- [24] A. Ghazi, S. Aljunid, S. Z. S. Idrus, A. Fareed, C. Rashidi, and A. Al-dawoodi, "Comparison of Laguerre-Gaussian and Hermite-Gaussian Modes for Optical-CDMA over Multi-Mode Fiber," in *IOP Conference Series: Materials Science and Engineering*, 2020, vol. 767, no. 1, p. 012011: IOP Publishing.
- [25] L. F. Jawad, B. Majeed, and H. Salim, "The impact of teaching by using STEM approach in the Development of Creative Thinking and Mathematical Achievement Among the Students of the Fourth Scientific Class," *International Journal of Interactive Mobile Technologies (iJIM)*, vol. 15, no. 13, 2021.
- [26] A. G. M. Al-dawoodi, and M. Mahmuddin, "An empirical study of double-bridge search move on subset feature selection search of bees algorithm," *Journal of Telecommunication, Electronic and Computer Engineering*, vol. 9, no. 2-2, pp. 11-15, 2017.
- [27] H. Pashler, P. M. Bain, B. A. Bottge, A. Graesser, K. Koedinger, M. McDaniel, and J. Metcalfe, "Organizing Instruction and Study to Improve Student Learning. IES Practice Guide. NCER 2007-2004," National Center for Education Research, 2007.
- [28] L. Pomerance, J. Greenberg, and K. J. Walsh, "Learning about Learning: What Every New Teacher Needs to Know," National Council on Teacher Quality, 2016.
- [29] Y. Weinstein, M. Sumeracki, and O. Caviglioli, *Understanding how we learn: A visual guide*. Routledge, 2018.
- [30] D. K. Abdul-Rahman, and H. Salim, "The Interactive Role Using the Mozabook Digital Education Application and its Effect on Enhancing the Performance of eLearning," *International Journal of Emerging Technologies in Learning (iJET)*, vol. 15, no. 20, pp. 21-41, 2020.
- [31] P. K. Agarwal, J. D. Karpicke, S. H. Kang, H. L. Roediger, "Examining the testing effect with open and closed-book tests," *The Official Journal of the Society for Applied Research in Memory and Cognition*, vol. 22, no. 7, pp. 861-876, 2008.
- [32] M. A. Smith and J. Karpicke, "Retrieval practice with short-answer, multiple-choice, and hybrid tests," *Memory*, vol. 22, no. 7, pp. 784-802, 2014.
- [33] J. Dunlosky, K. A. Rawson, E. J. Marsh, M. J. Nathan, and D. Willingham, "Improving students' learning with effective learning techniques: Promising directions from cognitive and educational psychology," *Psychological Science in the Public Interest*, vol. 14, no. 1, pp. 4-58, 2013.
- [34] S. D. Brookfield, *The skillful teacher: On technique, trust, and responsiveness in the classroom*. John Wiley & Sons, 2015.
- [35] A. Bandura and R. H. Walters, *Social learning theory*. Englewood cliffs Prentice Hall, 1977.
- [36] B. S. Bloom, "Taxonomy of Educational Objectives, Handbook 1: Cognitive Domain (White Plains, NY," ed: Longman, 1956.
- [37] D. J. Cothran and P. Kulinna, "Teachers' knowledge about and use of teaching models," *Physical Educator*, vol. 65, no. 3, pp. 122-133, 2008.
- [38] B. Dimitrios, S. Labros, K. Nikolaos, M. Koutiva, and K. Athanasios, "Traditional teaching methods vs. teaching through the application of information and communication technologies in the accounting field: Quo Vadis?," *European Scientific Journal*, vol. 9, no. 28, 2013.
- [39] T. Kliegr, Š. Bahník, and J. Fürnkranz, "Advances in machine learning for the behavioral sciences," *American Behavioral Scientist*, vol. 64, no. 2, pp. 145-175, 2020.
- [40] D. J. A. Nicol, "The power of internal feedback: exploiting natural comparison processes," *Assessment & Evaluation in Higher Education*, pp. 1-23, 2020.
- [41] L. Paul, K. Hilary, H. Alan, M. Lu, Y. J. E. Bernardo, and I. Technologies, "eLearning technology and the advancement of practical constructivist pedagogies: Illustrations from classroom observations," *Education and Information Technologies*, vol. 26, no. 1, pp. 89-101, 2021.
- [42] B. Yildirim and C. J. Türk, "Opinions of Secondary School Science and Mathematics Teachers on STEM Education," *World Journal on Educational Technology*, vol. 10, no. 1, pp. 52-60, 2018.
- [43] R. Wang, R. Lowe, S. Newton, and T. Kocatürk, "Task complexity and learning styles in situated virtual learning environments for construction higher education," *Automation in Construction*, vol. 113, p. 103148, 2020.

- [44] A. N. Saleem, and N. Ozdamli, Knowledge, "Gamification applications in E-learning: A literature review," *Technology, Knowledge and Learning*, pp. 1-21, 2021.
- [45] F. Fandiño and A. Velandia, "How an online tutor motivates E-learning English," *Heliyon* , vol. 6, no. 8, p. e04630, 2020.
- [46] J. König, D. J. Jäger-Biela, and N. Glutsch, "Adapting to online teaching during COVID-19 school closure: teacher education and teacher competence effects among early career teachers in Germany," *European Journal of Teacher Education*, vol. 43, no. 4, pp. 608-622, 2020.