

Training Needs of University Professors in Light of the Requirements of Distance Teaching (E-learning) (A Field Study on University Professors ...)

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Abstract

The digital revolution, amidst accelerating transformations and the growing reliance on distance teaching (e-learning), has underscored the need to assess university professors' readiness and their mastery of the technical and pedagogical skills required for instruction in virtual environments. Distance teaching is no longer merely an alternative but has become an essential component of higher education. Nevertheless, this shift does not necessarily imply that professors are adequately prepared or sufficiently equipped with the competencies required for this transition.

Accordingly, the present study aims to diagnose and identify the training needs of university professors in order to fulfil the tasks of teaching in line with the requirements of distance teaching. A questionnaire was developed in reference to the three stages of the teaching process: preparation of the virtual lesson, implementation and management of the virtual lesson, and post-lesson evaluation and follow-up. After verifying its psychometric properties, the instrument was administered to 60 male and female professors from the Faculty of Social and Human Sciences at Hadj Lakhdar University – Batna 1 and Larbi Ben M'hidi University – Oum El Bouaghi.

Findings revealed that most participants expressed a need for training across the three stages. The post-lesson evaluation and follow-up stage ranked first (61.11%, $M = 2.46$), followed by the stage of implementation and management (54.89%, $M = 2.38$), and finally the preparation stage (48.60%, $M = 2.28$). At the level of the questionnaire as a

whole, the dominant response was “I need training” (54.86%), followed by “Somewhat” (28.13%), and “I do not need training” (16.98%). These results highlight the presence of a clear and significant gap, underscoring the imperative to design and implement effective training programmes capable of meeting the requirements of distance teaching. **Keywords:** Training needs; distance teaching; e-learning; university professors; higher education.

1. Introduction

The contemporary world has witnessed profound and rapid transformations in the use of digital and communication technologies across all domains of life. These developments are no longer confined to economic and industrial sectors but have extended to the continuous endeavour to improve and innovate educational processes, both in terms of methods and curricula. Within this context, distance teaching (e-learning) has emerged as a fundamental instructional approach, increasingly reliant on digital technologies and offering broad prospects for future expansion and sustained development.

Distance teaching has evolved from being a supplementary alternative to becoming an indispensable component of the global higher education landscape, particularly in response to challenges imposed by worldwide transformations such as the COVID-19 pandemic. Its widespread adoption has also driven remarkable growth in the educational technology (EdTech) market and its supporting services. Statistical evidence illustrates the magnitude of this transformation: according to recent reports, the global EdTech market was valued at approximately USD 144.64 billion in 2023 and is projected to reach USD 598.82 billion by 2032, with a compound annual growth rate (CAGR) of 17.10% between 2024 and 2032 (Straits Research, 2024). This rapid expansion demonstrates the extent to which distance teaching has reshaped the education sector as a whole, and higher education in particular, by reinforcing reliance on technological platforms and tools, thereby facilitating teaching and learning, improving administrative efficiency, and advancing research endeavours.

Researchers have increasingly emphasised the importance of enhancing university-level teaching within this context, with the ultimate aim of supplying the labour market with highly competent graduates. Distance teaching has enabled professors to prepare lectures and applications with greater precision and efficiency through digital tools and online resources, fostering a learner-centred approach and allowing for individualised learning paths (Hodges et al., 2020). Moreover, it facilitates interactive and engaging learning experiences via e-learning platforms and diverse communication tools, thereby enhancing students’ comprehension and participation (Means et al., 2014). In terms of assessment, distance teaching enables efficient electronic evaluation of assignments and examinations, whether automated or supported by advanced systems, thus reducing the administrative burden on instructors and providing students with timely feedback (JISC, 2010).

In light of these global accelerations, distance teaching has become an unavoidable necessity, particularly in higher education. This reality has placed university professors before new pedagogical requirements, highlighting the importance of training as a

crucial means of preparing them to meet such demands. Training equips professors with updated knowledge, modern skills, and attitudes aligned with these changes. Like professionals in any institution, professors require continuous professional development, especially given the rapidly evolving nature of their roles. Mastery of distance teaching tools and programmes across all stages of the teaching process, preparation, delivery, and assessment, has now become an expectation.

Since the primary objective of training is to enrich knowledge, broaden perspectives, and address skill gaps identified in relation to expected performance or new technological demands, the concept of training needs emerges as the first step in any successful training endeavour. Without establishing a genuine and pressing need, effective training programmes cannot be designed. Consequently, assessing the presence or absence of training needs among professors constitutes a fundamental prerequisite for the training process as a whole.

Research Questions

From this standpoint, the present study is guided by the following central research question:

What are the training needs of university professors in light of the requirements of distance teaching (E-learning)?

From this overarching question, the following sub-questions emerge:

- What are the training needs of university professors with respect to the skills required for preparing the virtual lesson?
- What are the training needs of university professors with respect to the skills required for implementing and managing the virtual lesson?
- What are the training needs of university professors with respect to the skills required for virtual evaluation and follow-up?

2. Research Objectives

- To identify the skills required for the use of distance teaching (e-learning) across the three stages of the teaching process: preparation of the virtual lesson, implementation and management of the virtual lesson, and post-lesson evaluation and virtual follow-up.
- To present the skills necessary for the use of distance teaching (e-learning) to university professors at the Faculty of Social and Human Sciences, Hadj Lakhdar University – Batna 1 and Larbi Ben M'hidi University – Oum El Bouaghi, in order to determine the skills they require training in, those they require training in to some extent, and those for which no training is required.
- To rank the skills that university professors have not yet mastered in relation to distance teaching (e-learning), and which therefore require training, across the three stages of the teaching process: preparation of the virtual lesson, implementation and management of the virtual lesson, and post-lesson evaluation and virtual follow-up, according to the degree of training need as indicated by percentages and the mean scores obtained for each skill.

3. Significance of the Research

- The present study serves as a point of departure and a fertile foundation for designing a training programme for university professors, grounded in the training

needs identified in the performance of teaching tasks within the requirements of distance teaching (e-learning).

- To enhance the efficiency of university professors by providing them with a comprehensive understanding of the skills required for practising distance teaching (e-learning), thereby convincing them of the necessity of mastering, acquiring, and utilising such competences.
- This study serves as an indicator that can be employed to persuade decision-making bodies of the necessity of training university professors in the skills required for practising distance teaching (e-learning).
- Finally, the study constitutes a contribution and enrichment in the field of research related to the use of distance teaching (e-learning) in higher education, given both the novelty of the subject and the paucity of studies in this area.

4. Definition of Research Concepts: Theoretical Background

The following concepts were used in the present research:

4.1 Training Needs

Terminologically:

Training needs are defined as the gap between the knowledge, abilities, and skills an individual or team currently possesses and those required to achieve effective and successful performance in their roles or within the institution (Noe, 2020). This gap does not merely indicate a deficiency; it forms the foundation for determining what must be achieved through training. It is translated into a set of objectives that training programmes endeavour to fulfil, based on prior planning and a clear purpose.

Operationally:

In this research, training needs are defined as all the changes required in the performance of university professors at the Faculty of Social and Human Sciences, Hadj Lakhdar University – Batna 1 and Larbi Ben M'hidi University – Oum El Bouaghi, through training, so that they may competently undertake distance teaching (e-learning) across its various stages: preparation of the virtual lesson, implementation and management of the virtual lesson, and post-lesson evaluation and virtual follow-up.

4.2 Algerian University Professor

Terminologically:

A university professor (University Professor/Faculty Member) is generally defined in educational literature as a senior academic, often holding a doctoral degree or its equivalent, whose primary tasks centre on teaching in higher education, conducting scientific research, and serving the community (Goldstein & Ford, 2002; Noe, 2020). This individual represents the cornerstone of higher education institutions, acting as the primary driver of intellectual and research development, as well as a guide for students in their academic and professional trajectories.

Operationally:

For the purposes of this study, Algerian university professors are defined as faculty members of the Faculty of Social and Human Sciences at Hadj Lakhdar University – Batna 1 and Larbi Ben M'hidi University – Oum El Bouaghi (Algeria), who are engaged in teaching and who respond to the questionnaire designed to identify their training needs in order to fulfil teaching tasks within the requirements of distance

teaching (e-learning) across the three stages of the teaching process (preparation of the virtual lesson, implementation and management of the virtual lesson, and post-lesson evaluation and virtual follow-up).

4.3 Distance Teaching (E-Learning) in the Teaching Process

Terminologically:

Distance teaching (e-learning) is defined as an educational mode in which the learner is separated from the instructor, whether in space, in time, or in both. It is implemented through the use of a variety of technologies and interactive tools that connect the learner with the subject matter, peers, and the instructor, with the aim of facilitating the learning process (Moore & Kearsley, 2012). Distance teaching (e-learning) is not limited to a single tool; rather, it is a continually evolving educational model, encompassing both synchronous means (such as live virtual classrooms) and asynchronous means (such as recorded content and forums).

Operationally:

In this study, distance teaching (e-learning) is defined as a structured educational model delivered through digital environments, designed and implemented by the university professor across three sequential stages: advance planning, interactive implementation, and immediate assessment with continuous development. It comprises specific, measurable procedures utilising technological tools to ensure effectiveness and equity.

- **Preparation of the Virtual Lesson:** The set of organised procedures undertaken by the professor prior to the session to ensure the readiness of content and tools. These include analysing student data (skills, technological capabilities, learning styles) and converting the curriculum into digital modules.

- **Delivery and Management of the Virtual Lesson:** The set of interactive procedures implemented by the professor during the live session to ensure student engagement.

- **Evaluation and Follow-up of the Virtual Lesson:** The systematic skills employed by the professor upon completion of the session to measure learning and provide appropriate support.

5. Literature Review

Previous studies serve as the foundation upon which scientific research is built. In our study, we relied on a set of works that sought to identify the training needs of university professors in the field of teaching within the requirements of distance teaching (e-learning).

The first of these studies, by Martin et al. (2019), aimed to examine the extent to which gaps exist between faculty members' perception of the importance of competence and their confidence in their ability to teach among university professors in the United States. A questionnaire was administered to 205 professors, using the descriptive-analytical method. The study revealed a clear gap between perception and performance: most participants considered technological and pedagogical competences to be essential for effective online teaching, yet they reported medium to low confidence in actually possessing such competences. The study recommended the development of professional training programmes that address both pedagogical and technological aspects simultaneously (Martin F., Budhrani K., & Wang C., 2019, pp. 97–119)

The second study, by Brooks et al. (2020), aimed to assess the readiness of university faculty to make the immediate transition to full online distance teaching in response to the COVID-19 pandemic, as well as to determine the training needs required to ensure the continuity and quality of education. Employing the descriptive-analytical method, large-scale electronic surveys were conducted by EDUCAUSE on a sample of 672 faculty members from various higher education institutions in the United States. The analysis showed that 71% of respondents indicated an urgent need for training in electronic course design (Brooks C. & Grajek S., 2020, pp. 1–11).

The third study, by Tushar et al. (2023), sought to explore the e-assessment techniques adopted by university professors at Adams University in India during the COVID-19 pandemic. Using the case study method, semi-structured personal interviews were conducted with a sample of 31 professors. The results revealed that some individuals demonstrated readiness and flexibility in adapting to e-assessment, while many others had not received sufficient training in e-assessment techniques (Tushar G., Abha S., Prosari C., & Asmita B., 2023, pp. 1–10).

The fourth study, by Doris et al. (2021), aimed to assess faculty readiness for online teaching by analysing their levels of competence across several key domains, including instructional design, technological competence, time management, and communication—particularly in the context of the rapid shift to distance teaching (e-learning). Using a quantitative descriptive approach, the study employed a closed electronic questionnaire designed to measure levels of readiness among a sample of 56 university professors. The findings indicated that 68% felt they were somewhat ready for distance teaching, 54% reported being comfortable with electronic course design, and 46% stated they required further training in this domain. The study recommended enhancing training programmes and institutional support for faculty in distance teaching (e-learning) (Doris B. & Halupa C., 2022, pp. 185–195).

The fifth study, by Karen et al. (2018), aimed to evaluate the impact of faculty development programmes on improving professors' capacity to teach online, using the TPACK framework as an analytical model. Employing a quantitative analytical method, the study administered a questionnaire based on the TPACK framework to a number of university faculty members. The findings clearly demonstrated a significant positive impact of training programmes on improving faculty readiness for online teaching in accordance with the dimensions of the TPACK survey. The study recommended that such programmes be generalised within universities, especially in the post-pandemic context (Karen E. Brinkley-Etz Korn, 2018, pp. 28–35).

6. Field Research Procedures

6.1 Research Methodology

The primary objective of this research is to identify the training needs of university faculty members in carrying out the teaching profession within the requirements of distance education. On this basis, the descriptive method was adopted, as it focuses on studying the phenomenon as it exists in reality, describing it with precision, and expressing it both qualitatively and quantitatively.

6.2 Spatial and Temporal Boundaries of the Study

The fieldwork was conducted at the Faculty of Social and Human Sciences of Hadj Lakhdar University – Batna 1 and Larbi Ben M’hidi University – Oum El Bouaghi (Algeria), during the period from January 10, 2025, to February 25, 2025.

6.3 Research Population and Sample

The study population consisted of 426 faculty members from the Faculty of Social and Human Sciences: 142 faculty members from the Department of Social and Human Sciences at Larbi Ben M’hidi University – Oum El Bouaghi, and 284 from the Faculty of Social and Human Sciences at Hadj Lakhdar University – Batna 1.

An electronic questionnaire was designed and distributed via the professors’ institutional emails to all members of the population. A total of 60 valid questionnaires were retrieved for analysis, distributed across the two universities as follows: 56.7% from Hadj Lakhdar University – Batna 1 (approximately 34 faculty members), and 43.3% from Larbi Ben M’hidi University – Oum El Bouaghi (approximately 26 faculty members).

6.4 Data Collection Tools

6.4.1 Questionnaire Construction

The researchers designed and developed a questionnaire titled “Training Needs of University Faculty Members in Light of the Requirements of Distance Education.” This was achieved through a review of previous studies that addressed these training needs, as well as an examination of the official tasks of university faculty members as stipulated in the official gazette, in addition to theoretical frameworks and prior studies. Based on this review, the main dimensions of the questionnaire were defined, corresponding to the stages of the teaching process within the requirements of distance education (Preparing the virtual lesson, Implementing and managing the virtual lesson, Evaluation and virtual follow-up (post-lesson)).

After reviewing distance education programs and their application at each stage of the teaching process in Algerian universities, the questionnaire items were formulated such that each item measured a specific objective. To test its preliminary version, the questionnaire was presented to four faculty members. Based on their observations, the suggested response alternatives were adopted (I need training – Somewhat – I do not need training). Furthermore, certain items were eliminated due to misalignment with the research objectives

6.4.2 Psychometric Properties of the Questionnaire

– Validity of Questionnaire Scores

To verify the validity of the questionnaire scores, the researchers relied on the following:

→ Internal Consistency Validity

Factor 1: Preparing the Virtual Lesson

To confirm the validity of the first factor (Preparing the Virtual Lesson), Pearson’s correlation coefficient was calculated between each item score and the total score of the factor. The results are presented in the following table:

Items	Factor Score
Mastery of computer hardware and components.	0.797**
Creating virtual classrooms (Google Classroom, Moodle, Teams...).	0.810**

Formulating digitally measurable learning objectives.	0.711**
Converting textual content into short videos.	0.821**
Designing interactive activities (multiple choice, puzzles...) via Nearpod.	0.888**
Creating charts/infographics using applications.	0.752**
Digitally scheduling tasks over time.	0.806**
Documenting content sources to ensure copyright.	0.803**
Adjusting privacy and security settings in tools.	0.770**
Creating ready-made templates for recurring activities.	0.754**
Analyzing content compatibility with mobile devices.	0.841**
Preparing checklists.	0.760**
Preparing the virtual lesson (total score).	1
Significant at the 0.01 level	

Table (01): Correlation between the items of the first factor and its total score

From Table (01), it is observed that the correlation coefficients for each item of the first factor (Preparing the Virtual Lesson) with its total score ranged between 0.71 and 0.88, all statistically significant at the 0.01 level. Hence, it can be concluded that the first factor demonstrates high validity indicators, making its results reliable.

Factor Two: Implementing and Managing the Virtual Lesson

To verify the validity of Factor Two (Implementing and Managing the Virtual Lesson), Pearson's correlation coefficient was calculated between the score of each item of the factor and its overall score. The results are presented in the following table

Items	Dimension Score
Uploading educational content onto learning platforms	0.711**
Activating Breakout Rooms for group tasks	0.801**
Using Mentimeter surveys to assess immediate understanding	0.801**
Managing interactive discussions	0.744**
Employing interactive drawing tools (Jamboard)	0.731**
Managing time through a visual timer (Classroomscreen)	0.809**
Recording sessions and storing them securely	0.717**
Integrating Virtual Reality (VR) technologies into presentations	0.841**
Using focus tools (e.g., noise cancellation – Krisp)	0.803**
Applying active learning strategies (reciprocal teaching)	0.709**
Conducting quick quizzes through Kahoot/Quizizz	0.791**
Providing immediate feedback during discussions	0.819**
Managing digital behavior (participation regulations)	0.755**
Employing digital storytelling in explanations	0.802**
Closing the session with an interactive summary (Word Cloud)	0.799**

Implementing and Managing the Virtual Lesson	1
Significant at the 0.01 level	

From Table (02), it is evident that the correlation coefficients for each item of Factor Two (Implementing and Managing the Virtual Lesson) with its overall score ranged between (0.70 and 0.84). These were statistically significant at the 0.01 level, which indicates that Factor Two demonstrates high validity and its results are reliable.

Factor Three: Virtual Assessment and Follow-up (Post-Lesson)

To verify the validity of Factor Three (Virtual Assessment and Follow-up – Post-Lesson), Pearson’s correlation coefficient was calculated between the score of each item of the factor and its overall score. The results are presented in the following table:

Items	Dimension Score
Designing diverse electronic tests (Google Forms)	0.761**
Creating group projects subject to evaluation via Google Docs	0.819**
Using automated grading bots (Auto-grading)	0.820**
Analyzing student results through Power BI/Excel	0.770**
Defining Key Performance Indicators (KPIs) for each student	0.862**
Providing personalized audio/visual feedback	0.753**
Scheduling individual support sessions via Calendly	0.791**
Publishing assessment solutions with explanations of common errors	0.879**
Preparing student performance reports	0.806**
Employing formative assessment tools	0.717**
Designing electronic student portfolios	0.745**
Monitoring assignment submissions via task management platforms	0.800**
Analyzing absenteeism and lateness patterns and interventions	0.801**
Creating a reusable digital question bank	0.744**
Applying peer assessment	0.731**
Linking assessment results to learning objectives	0.809**
Using early-warning systems for struggling students	0.717**
Sending quick satisfaction surveys	0.841**
Documenting best practices in assessment	0.803**
Analyzing student satisfaction data through designing an electronic survey	0.709**

Redesigning content based on assessment results	0.791**
Virtual Assessment and Follow-up (Post-Lesson)	1
Significant at the 0.01 level	

Table 03: Correlation of Factor Three items with the overall score of the factor

From Table (03), it is evident that the correlation coefficients for each item of Factor Three (Virtual Assessment and Follow-up – Post-Lesson) with its overall score ranged between (0.70 and 0.87). These were statistically significant at the 0.01 level, which indicates that Factor Three demonstrates high validity and its results are reliable.

Validity of the Instrument as a Whole

In order to ensure the validity of the instrument, the Pearson correlation coefficient was calculated between the factors constituting the questionnaire on the training needs of university faculty members in light of the requirements of distance education and the overall score. The results are presented in the following table:

Table (04): Values of Pearson correlation coefficients between the total score of

Dimensions	Total Score
Preparation of the virtual lesson	0.877**
Implementation and management of the virtual lesson	0.845**
Virtual evaluation and follow-up (after the lesson)	0.791**
Total score	1
Significant at the 0.01 level	

the questionnaire and its constituent factors

From Table (04), it can be observed that the Pearson correlation coefficients for each factor of the questionnaire on the training needs of university faculty members in light of the requirements of distance education with the overall score ranged between (0.79 and 0.87). These were statistically significant at the 0.01 level. Hence, we conclude that the instrument is valid and its results can be relied upon.

→Discriminant Validity:

To estimate the validity of the questionnaire scores, discriminant validity was used by applying the instrument to 30 faculty members from the Faculty of Social and Human Sciences at the Universities of Hadj Lakhdar – Batna 1 and Larbi Ben M'hidi – Oum El Bouaghi. After ranking the participants' scores on the scale in ascending or descending order, 27% of the highest scores and 27% of the lowest scores were selected, corresponding to 8 participants in the upper group and 8 in the lower group. The means and standard deviations for each group were then calculated to estimate the differences between the two groups using the Independent Samples T-test.

The above steps were implemented using SPSS (version 22). The results are presented in the following table

	Terminal Group	N	Mean	Standard Deviation	T	Sig.	Statistical Significance
Scores	Lower scores	8	1.74	0.35	8.95	0.000	Significant
	Higher scores	8	2.88	0.07			

Table (05): Independent Samples T-test of the significance of differences between the upper and lower extreme groups

From Table (05), it is observed that the T-value for the significance of differences between the two groups is 8.95, with a significance level of Sig = 0.000, which is lower than 0.05. Thus, the differences are statistically significant at the 0.01 level. This indicates that the questionnaire possesses discriminant validity, i.e., it is capable of distinguishing between high-performing and low-performing faculty members.

Reliability of the Questionnaire Scores

To ensure the reliability of the instrument, Cronbach's Alpha coefficient was calculated for the items of the questionnaire as a whole and for each of its factors. The results were as follow

Dimensions	Number of Items	Cronbach's Alpha
Preparation of the Virtual Lesson	12	0.896
Implementation and Management of the Virtual Lesson	15	0.923
Evaluation and Virtual Follow-up (Post-Lesson)	21	0.950
Total Score	48	0.970

Table (06): Reliability of the questionnaire and its constituent factors

From Table (06), it is noted that the Cronbach's Alpha coefficient for the overall questionnaire reached **0.97**, while the coefficients for each factor individually ranged between **0.896 and 0.950**. These are considered excellent values, indicating high reliability. Therefore, it can be concluded that the instrument demonstrates a high degree of reliability, both at the level of its overall structure and its sub-dimensions, which allows us to rely confidently on the results obtained through this tool.

6-4 Presentation of the Research Findings in Light of the Research Questions

6-4-1 Presentation of the Findings in Light of the First Research Question:

What are the training needs of university faculty in light of the requirements related to the skills necessary for preparing the virtual lesson?

The requirements of using distance education in preparing virtual lessons for university faculty obtained the percentages presented in the following table:

N	Items	Alternatives						Mean	Stan dard Devi ation
		I need training		somewhat		Idon't need training			
		Fre q	%	Fre q	%	Freq	%		
01	Mastery of computer and its components	8	13.3	19	31.7	33	55	1.58	0.71
02	Creation of virtual classrooms (Google Classroom, Moodle, Teams, etc.)	22	36.7	28	46.6	10	16.7	2.2	0.70
03	Formulating measurable learning objectives digital	14	23.3	32	53.3	14	23.3	2	0.68
04	onverting textual content into short videos	35	58.3	16	26.7	9	15	2.43	0.73
05	Designing interactive activities (MCQs – puzzles...) via Nearpod	34	56.7	18	30	8	13.3	2.43	0.71
06	Creating charts/infographic using applications	40	66.6	13	21.7	7	11.7	2.55	0.69
07	Scheduling tasks digitally	27	45	23	38.3	10	16.7	2.28	0.73
08	Documenting content sources to ensure copyright	22	36.7	15	25	23	38.3	1.98	0.86

09	Adjusting privacy and security settings in tools	32	53.3	20	33.3	8	13.3	2.4	0.71
10	Development of ready-made templates for recurrent activities	36	60	13	21.7	11	18.3	2.41	0.78
11	Analysis of content compatibility with mobile device	37	61.7	18	30	5	8.3	2.53	0.64
12	Analysis of content compatibility with mobile device	43	71.7	8	13.3	9	15	2.57	0.73
	Factor 1 (Preparation of the Virtual lesson)	29.17	48.60	18.58	30.96	12.25	20.40	2.28	0.72

Table (07): Results of the respondents' answers on the items of the "Preparation of the Virtual Lesson" factor

From Table (07), it can be observed that the mean values for the alternative "**i need training**" ranged between **1.58** and **2.57**.

The highest training need was recorded for **item (12)** "Preparing checklists", with **71.7%** of the sample reporting **i need training**, a mean of **2.57**, and a standard deviation of **0.73**.

This was followed by item (06) "Creating charts/infographics using applications" (66.6%, M = 2.55, SD = 0.69).

Then **item (11)** "Analyzing compatibility of content with mobile devices" (61.7%, M = 2.53, SD = 0.64).

Item (04) "Converting textual content into short videos" came next (58.3%, M = 2.43, SD = 0.73).

Item (05) "Designing interactive activities via Nearpod" (56.7%, M = 2.43, SD = 0.71).

Item (10) "Creating ready-made templates for repetitive activities" (60.0%, M = 2.41, SD = 0.78).

Item (09) "Adjusting privacy and security settings" (53.3%, M = 2.40, SD = 0.71).

Item (07) "Scheduling tasks digitally" (45.0%, M = 2.28, SD = 0.73).

Item (02) "Creating virtual classrooms" (36.7%, M = 2.20, SD = 0.70).

Item (03) "Formulating measurable learning objectives" (23.3%, M = 2.00, SD = 0.68).

Item (08) "Documenting content sources" (36.7%, M = 1.98, SD = 0.86).

Finally, the lowest training need was for **item (01)** "Mastery of computer components", with only **13.3%** reporting **i need training**, a mean of **1.58**, and a standard deviation of **0.71**.

In general, for the **entire factor (Preparation of the Virtual Lesson)**, the results reveal that the largest proportion of the sample leaned toward the alternative "**i need training**" (**48.60%**), followed by "**somewhat**" (**30.96%**), and finally "**i don't need training**" (**20.40%**). The overall mean was **2.28**, which falls between the alternatives "**i need training**" and "**somewhat**", with a standard deviation of **0.72**, indicating the absence of outlier values.

6-4-2. Presentation of the Research Results in Light of the Second Question:

What are the training needs of university professors in light of the requirements related to the skills of implementing and managing the virtual lesson?

The requirements of using distance teaching (e-learning) in the implementation and management of the virtual lesson among university professors obtained the percentages shown in the following table:

N	Items	Alternatives						Mean	Stan dard Devi ation
		I need training		somewhat		Idon't need training			
		Fre q	%	Fre q	%	Freq	%		
01	Uploading educational content to learning platforms	16	26.7	21	35	23	38.3	1.88	0.79
02	Activating “Breakout Rooms” for group tasks	22	36.7	23	38.3	15	25	2.11	0.77
03	Using Mentimeter polls for immediate assessment	41	68.3	15	25	4	6.7	2.61	0.60
04	Managing discussions interactively	19	31.7	19	31.7	22	36.7	1.95	0.82
05	Employing interactive whiteboard tools (Jamboard)	44	73.3	12	20	4	6.7	2.66	0.59
06	Managing time with a visual timer (Classroomscreen)	35	58.3	17	28.3	8	13.3	2.45	0.71
07	Recording and securely storing the session	29	48.3	20	33.3	11	18.3	2.30	0.75
08	Integrating Virtual Reality (VR) technologies in presentations	46	76.7	13	21.7	1	1.7	2.75	0.47
09	Using focus/noise- cancellation tools (Krisp)	41	68.3	15	25	4	6.7	2.61	0.60
10	Applying active learning strategies (reciprocal teaching)	31	51.7	21	35	8	13.3	2.38	0.70

11	Conducting quick competitions via Kahoot/Quizizz	30	50	21	35	9	15	2.35	0.72
12	Providing immediate feedback during discussion	29	48.4	17	28.3	14	23.3	2.25	0.80
13	Managing digital behavior (participation rules)	34	56.7	18	30	8	13.3	2.43	0.71
14	Employing digital storytelling in teaching	41	68.3	15	25	4	6.7	2.61	0.60
15	Concluding the session with an interactive summary (Word Cloud)	36	60	14	23.3	10	16.7	2.43	0.76
	Second factor	32.9 4	54.8 9	17. 4	28.9 9	9.66	16.1 1	2.38	0.69

Table (08): Results of the respondents' answers on the items of the "Implementation and Management of the Virtual Lesson" factor

From Table (08), it can be observed that the mean values for the alternative **"I need training"** ranged between **1.88 and 2.75**.

The highest training need was recorded for item (08) "Integrating Virtual Reality (VR) technologies in presentations", with **76.7%** of the sample reporting **«I need training»**, a mean of **2.75**, and a standard deviation of **0.47**.

This was followed by item (05) "Employing interactive whiteboard tools (Jamboard)" (73.3%, M = 2.66, SD = 0.59).

Then items (03), (09), and (14) "Using Mentimeter polls for immediate assessment," "Using noise-cancellation tools (Krisp)," and "Employing digital storytelling in teaching" came next (68.3%, M = 2.61, SD = 0.60).

Item (06) "Managing time with a visual timer (Classroomscreen)" followed (58.3%, M = 2.45, SD = 0.71).

Item (15) "Concluding the session with an interactive summary (Word Cloud)" (60.0%, M = 2.43, SD = 0.76).

Item (13) "Managing digital behavior (participation rules)" (56.7%, M = 2.43, SD = 0.71).

Item (10) "Applying active learning strategies (reciprocal teaching)" (51.7%, M = 2.38, SD = 0.70).

Item (11) "Conducting quick competitions via Kahoot/Quizizz" (50.0%, M = 2.35, SD = 0.72).

Item (07) "Recording and securely storing the session" (48.3%, M = 2.30, SD = 0.75).

Item (12) "Providing immediate feedback during discussion" (48.4%, M = 2.25, SD = 0.80).

Item (02) "Activating Breakout Rooms for group tasks" (36.7%, M = 2.11, SD = 0.77).

Item (04) "Managing discussions interactively" (31.7%, M = 1.95, SD = 0.82).

Finally, the lowest training need was for item (01) “Uploading educational content to learning platforms”, with **26.7%** reporting **I need training**, a mean of **1.88**, and a standard deviation of **0.79**.

In general, for the entire factor (**Implementation and Management of the Virtual Lesson**), the results reveal that the largest proportion of the sample leaned toward the alternative **“I need training” (54.89%)**, followed by **“somewhat” (28.99%)**, and finally **“I don’t need training” (16.11%)**. The overall mean was **2.38**, which falls between the alternatives **“I need training”** and **“Somewhat”**, with a standard deviation of **0.69**, indicating the absence of outlier values.

6-4-3 Presentation of Research Results in Light of the Third Question:

What are the Training Needs of University Professors in Terms of the Skills Required for Virtual Assessment and Follow-up (Post-Lesson)?

The requirements for the use of distance education in virtual assessment and follow-up (post-lesson) among university professors yielded the percentages shown in the following table:

N	Items	Alternatives						Mean	Stan- dard Devi- ation
		I need training		somewhat		Idon't need training			
		Fre q	%	Fre q	%	Freq	%		
01	Designing diversified electronic tests (Google Forms).	23	38.4	17	28.3	20	33.3	2.05	0.84
02	Creating group projects subject to evaluation via Google Docs.	32	53.3	19	31.7	9	15	2.38	0.73
03	Using automated grading bots (Auto-grading).	46	76.6	10	16.7	4	6.7	2.7	0.58
04	Analyzing students' results through Power BI/Excel.	39	65	17	28.3	4	6.7	2.58	0.61
05	Setting performance indicators (KPI) for each student.	43	71.7	12	20	5	8.3	2.63	0.63
06	Providing personalized audio/visual feedback.	39	65	16	26.7	5	8.3	2.56	0.64

07	Scheduling individual support sessions via Calendly.	48	80	9	15	3	5	2.75	0.53
08	Publishing assessment solutions with explanations of common errors.	39	65	15	25	6	10	2.55	0.66
09	Preparing performance reports for students.	30	50	17	28.3	13	21.7	2.28	0.79
10	Employing formative assessment tools.	39	65	16	26.7	5	8.3	2.56	0.64
11	Designing an electronic portfolio (E-Portfolio) for students.	36	60	13	21.7	11	18.3	2.41	0.78
12	Following up on assignments through task management platforms.	30	50	16	26.7	14	23.3	2.26	0.81
13	Analyzing patterns of absenteeism, lateness, and interventions.	34	56.7	18	30	8	13.3	2.43	0.71
14	Creating a reusable digital question bank.	28	46.6	16	26.7	16	26.7	2.2	0.83
15	Applying peer assessment.	41	68.3	15	25	4	6.7	2.61	0.60
16	Linking assessment results to learning objectives.	26	43.4	17	28.3	17	28.3	2.15	0.83
17	Using early warning systems for struggling students.	48	80	9	15	3	5	2.75	0.53
18	Sending quick satisfaction surveys.	42	70	10	16.7	8	13.3	2.56	0.71
19	Documenting best practices in assessment.	42	70	13	21.7	5	8.3	2.61	0.63
20	Analyzing student satisfaction data through electronic surveys.	34	56.7	15	25	11	18.3	2.38	0.77
21	Redesigning content based on assessment results.	31	51.7	18	30	11	18.3	2.33	0.76
	Third factor	36.67	61.11	14.66	24.45	8.67	14.43	2.46	0.69

Table (09): Results of the respondents' answers on the factor “Virtual Assessment and Follow-up (Post-lesson)”

From Table (09), it is observed that the mean values corresponding to the alternative “Ineed training” ranged between (2.75 and 2.05). **Items (07) and (17)** ranked first in terms of training need, with 80% of the sample reporting a need for training, recording the highest mean (2.75) and a standard deviation of (0.53).

This was followed by **item (03)**, where 76.6% of the sample indicated a need for training (M = 2.70, SD = 0.58). Next came **item (05)**, with 71.7% of the sample (M = 2.63, SD = 0.63). **Item (19)** followed, with 70% of the sample (M = 2.61, SD = 0.63). Then **item (15)**, with 68.3% (M = 2.61, SD = 0.60). **Item (04)** came next, with 65% (M = 2.58, SD = 0.61).

Items (06) and (10) both recorded training needs from 65% of the sample (M = 2.56, SD = 0.64). Similarly, **item (18)** registered 70% (M = 2.56, SD = 0.71), while **item (08)** recorded 65% (M = 2.55, SD = 0.66). Item (13) came next with 56.7% (M = 2.43, SD = 0.71). **Item (11)** followed, with 60% (M = 2.41, SD = 0.78).

Then came **item (20)**, with 56.7% (M = 2.38, SD = 0.77), and **item (02)**, with 53.3% (M = 2.38, SD = 0.73). **Item (21)** recorded 51.7% (M = 2.33, SD = 0.76). **Item (09)** followed with 50% (M = 2.28, SD = 0.79), and **item (12)** also with 50% (M = 2.26, SD = 0.81).

Item (14) came next with 46.6% (M = 2.20, SD = 0.83), followed by **item (16)** with 43.4% (M = 2.15, SD = 0.83). Finally, **item (01)** registered the lowest training need, with only 38.4% of the sample, a mean of (2.05), and a standard deviation of (0.84).

In general, for the entire factor, the results reveal that the largest proportion of the sample leaned toward the alternative “**I need training**” regarding skills of virtual assessment and follow-up (post-lesson) (61.11%), followed by “**Somewhat**” (24.45%), and finally “**I don’t need training**” with the lowest proportion (14.43%). The overall mean was (2.46), which falls between the alternatives “Ineed training” and “**Somewhat**” with a standard deviation of (0.69), indicating the absence of outlier values.

4-4 Presentation of Research Findings in Light of the Main Research Question:

What are the training needs of university faculty members within the requirements of Distance Teaching (E-learning) for performing the teaching profession?

Overall Results:

The requirements of Distance Teaching (E-learning) in the teaching task across its three stages, as reported by university faculty members, obtained the percentages shown in the following tab

Factors	Alternatives			Mean	Standard Devi
	I need training	somewhat	Idon’t need training		

	Freq	%	Freq	%	Freq	%		ation
Preparation of the Virtual Lesson	29.17	48.60	18.58	30.96	12.25	20.40	2.28	0.72
Implementation and Management of the Virtual Lesson	32.94	54.89	17.4	28.99	9.66	16.11	2.38	0.69
Virtual Assessment and Follow-up (Post-lesson)	36.67	61.11	14.66	24.45	8.67	14.43	2.46	0.69
Total	32.93	54.86	16.88	28.13	10.19	16.98	2.37	0.7

Table (10): Results of the respondents' answers to the Training Needs Questionnaire for University Faculty Members in light of the requirements of Distance Teaching (E-learning).

– **Ranking of Training Needs of University Faculty Members in light of the Requirements of Distance Teaching (E-learning) for performing the teaching task according to their level of need for training:**

The ranking of training needs of university faculty members, in relation to the requirements necessary for performing the teaching task within Distance Teaching (E-learning), according to their level of need for training (as expressed through their lack of mastery), is presented as follows:

Factor 1: Preparation of the Virtual Lesson			Factor 2: Delivery & Management of the Virtual Lesson			Factor3: Virtual Assessment & Follow-up (Post-lesson)		
Item	Freq	%	Item	Freq	%	Item	Freq	%
80.0	48	7	76.7	46	8	71.7	43	12
80.0	48	17	73.3	44	5	66.6	40	6
76.6	46	3	68.3	41	3	61.7	37	11
71.7	43	5	68.3	41	9	60.0	36	10
70.0	42	18	68.3	41	14	58.3	35	4
70.0	42	19	60.0	36	15	56.7	34	5
68.3	41	15	58.3	35	6	53.3	32	9
65.0	39	4	56.7	34	13	45.0	27	7
65.0	39	6	51.7	31	10	36.7	22	8
65.0	39	8	50.0	30	11	36.7	22	2
65.0	39	10	48.3	29	12	23.3	14	3
60.0	36	11	48.3	29	7	13.3	8	1
56.7	34	13	36.7	22	2			
56.7	34	20	31.7	19	4			
53.3	32	2	26.7	16	1			

51.7	31	21						
50.0	30	9						
50.0	30	12						
46.6	28	14						
43.4	26	16						

Table (11): Ranking of the training needs of university faculty members in light of the requirements of Distance Teaching (E-learning), according to their expressed level of need for training.

From **Tables (10) and (11)**, it is evident that the majority of respondents expressed their need for training in relation to the requirements necessary for performing the teaching task within Distance Teaching (E-learning). The alternative **I need training** on teaching skills using Distance Teaching (E-learning) obtained the highest proportion (54.86%), followed by **Somewhat** with 28.13%, and finally **I don't need training** with the lowest percentage (16.98%). The overall mean was (2.37), which falls between the alternatives **I need training** and **Somewhat**, with a standard deviation of (0.70), indicating the absence of outlier values. Furthermore, the training needs within each factor of the questionnaire were ranked according to the intensity of the training requirement, thereby reflecting the priorities for training.

7. Discussion of Research Findings

The results pertaining to the **first factor** of the questionnaire revealed that the majority of the participants, without exception, leaned towards the alternative (I need training). This underscores their pressing need for training in skills related to **Distance Teaching (E-learning)** during the **first stage** of the instructional process, namely, the preparation of the virtual lesson. The skill of developing checklists ranked first, followed by the skill of creating charts/infographics using applications, then the skill of analyzing the compatibility of content with mobile devices, then designing ready-made templates for recurrent activities, transforming textual content into short videos, designing interactive activities (multiple choice, puzzles, etc.) via Nearpod, configuring privacy and security settings in tools, digitally allocating tasks over time, documenting content sources to ensure copyright protection, creating virtual classrooms (Google Classroom, Moodle, Teams...), formulating measurable learning objectives in digital format, and finally, the skill of controlling the computer and its components.

These findings, in relation to the first factor, align with the study of **Ghnia et al. (2023)**, which concluded that 52 of the participants considered themselves unprepared to transition to online training without institutional support. Furthermore, they lacked adequate skills in e-lesson design and digital interaction.

The results concerning the **second factor** of the questionnaire also indicated that the alternative (I need training) garnered the highest proportion across all items. This reflects the acute need of the participants for training in skills pertinent to the **delivery and management of the virtual lesson**. The skill of integrating Virtual Reality (VR)

technologies into presentations ranked first, followed by using interactive drawing tools (Jamboard), then employing Mentimeter surveys for instant comprehension checks, utilizing focus tools (such as Krisp noise cancellation), incorporating digital storytelling in explanations, closing the session with an interactive summary (Word Cloud), managing time using a visual timer (Classroomscreen), regulating digital behavior (participation rules), applying active learning strategies (reciprocal teaching), conducting quick competitions via Kahoot/Quizizz, providing instant feedback during discussions, recording and securely storing sessions, activating Breakout Rooms for group tasks, facilitating interactive discussions, and lastly, uploading learning content onto educational platforms.

These findings are consistent with the study of Doris et al. (2021), which reported that 46% of participants expressed the need for further training in online teaching, particularly in instructional design, technological competence, time management, and communication.

Similarly, the results pertaining to the **third factor** of the questionnaire revealed that the alternative (I need training) attained the highest proportion across all items. This indicates the urgent necessity for training in skills related to **virtual assessment and follow-up (post-lesson)**. The skill of scheduling individual support sessions via Calendly ranked first, followed by using early warning systems for struggling students, employing auto-grading bots, establishing performance indicators (KPI) for each student, conducting quick satisfaction surveys, documenting best practices in assessment, applying peer assessment, analyzing student results using Power BI/Excel, providing personalized audio/visual feedback, publishing assessment solutions with explanations of common errors, utilizing formative assessment tools, designing electronic portfolios, analyzing absence and tardiness patterns and their interventions, analyzing student satisfaction data through electronic surveys, creating collaborative projects via Google Docs, redesigning content based on assessment results, preparing student performance reports, monitoring assignment submissions via task management platforms, creating reusable digital question banks, linking assessment results to learning objectives, and lastly, designing diverse electronic tests via Google Forms.

These findings concur with the study of Tushar et al. (2023), which found that while some individuals showed readiness and flexibility to adapt to electronic assessment, many faculty members had not received sufficient training in e-assessment techniques. Taken as a whole, the findings of the questionnaire highlight the **critical necessity of training across all three stages of the instructional process**. Skills related to virtual assessment and follow-up (post-lesson) ranked first in importance, followed by those concerning the delivery and management of the virtual lesson, and finally, those associated with the preparation of the virtual lesson.

In general, it may be concluded that the inability of faculty members to adequately master the skills required for Distance Teaching (E-learning) is attributable to the rapid and ongoing technological changes worldwide in the realm of online education, which are met with insufficient or nonexistent training within universities. Adopting Distance Teaching (E-learning) in higher education has become inevitable—particularly during and after the COVID-19 pandemic. However, its success hinges upon equipping faculty

with the necessary skills to face this transformative challenge with ethical responsibility and effectiveness, while prioritizing professional training to overcome digital illiteracy and fully embrace Distance Teaching (E-learning). This, in turn, would enable them to prepare students for the realities of globalization, modern technologies, and emerging transformations.

9. Conclusion and Recommendations

The findings of this study confirmed that university professors express an urgent need for training in the skills of Distance Teaching (E-learning) across the different stages of the educational process—beginning with the preparation of the virtual lesson, moving through its implementation and management, and culminating in assessment and follow-up after the lesson. The results further revealed that the most significant training gap was evident in the stage of virtual assessment and follow-up after the lesson, followed by the stage of implementation and management of the lesson, and lastly, the stage of preparation of the virtual lesson. This outcome clearly indicates that university professors lack the technical and pedagogical competences required to manage the teaching process efficiently within digital environments, in line with the fast-paced global demands.

In light of these findings, the following recommendations are proposed:

- Designing a training program based on the identified needs.
- Training professors in applied/practical skills rather than restricting training to the theoretical dimension.
- Ensuring that the state provides universities with technical and pedagogical support centers to accompany professors throughout the implementation of Distance Teaching (E-learning).
- Strengthening the role of faculty development bodies within universities and allocating budgets to finance training programs and acquire modern technological tools associated with the Distance Teaching (E-learning) system.
- Promoting the exchange of expertise among universities through joint workshops or national training initiatives to enhance the competences of faculty members in Distance Teaching (E-learning).

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