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Research Article

Training Needs in Light of the Degree of Awareness of Modern Teaching Strategies and Their Application in the Tertiary Level during the COVID-19 Pandemic

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This study aimed to evaluate modern teaching methods applied by the staff at the University of Hail during the COVID-19 pandemic to identify the most important causes, needs, and barriers from their perspective. Also, the study aimed to reveal individual differences (gender, academic rank, or experience) of statistical significance in the staff's degree of use. To achieve the objectives of the study, the researcher used descriptive analysis on a sample of 164 faculty members. The researcher designed a five-axis questionnaire. The results indicated the importance of e-training when using modern teaching methods. Also, it was clear that the research sample uses MTM to some extent, and the use of modern teaching strategies was found to be moderate. Gender, academic rank, years of experience in the field of university education, and academic specialization did not affect training needs. In addition, the results showed that the most important reason for using MTM during the COVID-19 pandemic was "Mastery of how to use it."

1. Introduction

University teaching is a vital function that effectively prepares students for the future, arming them with specialized knowledge, positive behavioral trends and values, and necessary scientific and practical skills to render them as active community members [1]. A faculty member's role is beyond transferring knowledge, as the primary purpose of teaching is to bring change in the learner to achieve the targeted results [2].

Traditional teaching methods are methods used by most teachers to varying degrees, including the following: (a) teacher lecturing and student note taking, (b) individual student pen-and-paper practice problems, (c) pen-and-paper assessment, (d) laboratory activities with predetermined outcomes in science classes, and (e) discussions [3]. Traditional learning methods (teacher-centered methods) failed to meet the educational process requirements during the pandemic. Modern learning methods require a learner-centric approach to effectively prepare students for the future through active learning. The evolution of the role of teachers and learners has become a necessity to remain contemporary [4].

Theresa [5] stresses that updating curricula means providing new content for the material and novel teaching methods, making the curriculum more effective by creating active situations that allow for positive participation in the learning discovery. This increases the depth of learning experiences with real-life functional skills [6–9].

Studies revealed the causes of students' poor performance were ineffective teaching methods that disregard individual differences and technological innovations [10–12].

Therefore, it is necessary to first identify and utilize modern teaching methods [13]. Secondly, we must identify training needs, obstacles, challenges, and priorities to uncover gaps. Decision makers should provide solutions to enhance training programs [2, 14–16].

1.1. The Study Problem. Faculty members play a vital role in preparing and qualifying educational outcomes according to contemporary requirements. Currently, two methods of teaching exist: traditional and modern teaching methods [17]. One of the greatest challenges in lectures is the ability to meet all learning styles and the diverse needs of students.

Studies revealed that the educational practices of university staff were not optimal [15, 18].

Also, it was found that the most impactful impediment to using modern teaching methods is teachers' lack of awareness on the importance of keeping up with recent developments and training [1, 19].

In-service training programs and the employment of modern teaching methods are of immense importance. It is vital to train teachers on the use of active learning strategies and emulate some other university experiences during the COVID-19 pandemic [20, 21].

The researcher also interviewed a group of faculty members, discussing modern teaching methods. The interviews concluded that there is a lack of understanding and training in modern teaching methods for use in proper ways.

The research problem is "the weak use of modern teaching methods at the UOH during the COVID-19 pandemic due to obstacles and training requirements among university staff according to their awareness of modern teaching strategies and their application in teaching."

1.2. Questions

(1) How extensively does UOH staff use MTM?

(2) Why is MTM used by UOH staff from their point of view?

(3) What are the obstacles hindering the use of MTM from UOH staff's view?

(4) What are training needs do UOH staff need for MTM from their point of view?

(5) What are the proposed training methods to develop the skills of MTM using UOH staff from their point of view?

(6) Are there statistically significant differences, at the level of 0.05, in the responses of the study sample in the degree of staff's use of MTM attributable to a specific variable (gender, academic rank, years of experience, or academic specialization)?

1.3. Goals. The study seeks to assess MTM usage by the UOH staff and identify the most important reasons for using/not using MTM from their point of view. Also, the study aims to identify the most important training needs for using MTM and determine the best training methods to develop their skills.

This may be useful in assessing the current usage of MTM, allowing the development plans to improve their performance based on actual training needs. Moreover, these facilitators responding to modern trends call for an increased interest in MTM.

1.4. Theoretical Framework. The novel coronavirus disease (COVID-19) outbreak transformed daily life. The disease hindered education, as instructors must deliver lectures safely while ensuring the integrity and continuity of the education process. The highly contagious nature of the virus has made it challenging to continue lectures, prompting teachers to use MTM.

MTM development and application for the educational process allows students to self-learn, collaborate, and participate. Therefore, professional development in education to expand the use of MTM requires effective training programs to achieve tangible needs-based development. Colleges and universities rely heavily on qualified staff [22], especially during the COVID-19 pandemic.

1.4.1. Modern Teaching Methods. Teaching methods are the various strategies that a teacher uses to present knowledge to students according to educational objectives to achieve the learning outcomes. They help teachers to teach and communicate ideas and skills to students. Numerous and diverse teaching methods exist. This diversity leads to diverse philosophical and educational theories on which they are based, and the varying educational positions require a suitable method [5]. Beichner [23] defines the most important specifications of MTM as follows: (1) comprehensiveness, (2) flexibility, adaptability, and development, (3) objective-based teaching, (4) addressing individual differences, and (5) accounting for the type of teaching (individual/group).

1.4.2. Active Learning-Based Teaching Methods. Active learning-based teaching methods are educational activities directing students to act and contemplate their actions. Hartikainen et al. [24] define them as the presence of ideas in the cognitive structure of the learner linked to the presented ideas, where the learner perceives them. The cognitive conflicts faced through participation, dialogue, and classroom interaction in organized groups and educational activities guide toward higher levels of thinking. The represented procedures and methods are considered the executive and procedural aspects of active learning, contributing to achieving the desired educational goals efficiently.

Many teaching strategies suit active learning. Professors must realize that there is no perfect strategy or method; appropriate strategies vary with lessons or situations and students. Teaching methods have changed due to social changes requiring university education to adapt to a complex reality. The first step is to define the characteristics of modern teaching methods, shifting the paradigm from the teacher as a provider of knowledge to the student as an acquirer of knowledge, where the student is not a passive recipient anymore but an active efficient researcher in the process of building and applying knowledge and skills [25].

Konopka et al. [26] believe that active learning is achievable through actively engaging teaching methods in the process of authentic learning, replacing memorization and repetition. On the other hand, this learning focuses on continuous intellectual participation. Active teaching engages students in curricular content, promoting the development of their procedural knowledge and its integration with declarative and metacognitive knowledge.

1.4.3. Prominent Active Learning-Based Modern Teaching Methods. By analyzing the most important studies and literature that dealt with modern teaching methods based on active learning [7, 9, 20, 27–32]), the following modern teaching methods are believed to be the most important active learning methods: cognitive KWL teaching strategy, concept mapping, brainstorming, problem solving, directed discovery, inductive, inquiry, and project-based learning, reciprocal teaching method, think, peer assessment-teaching method, learning by modeling, mastery learning, roleplaying, peer learning, cognitive load teaching strategy, and think-pair-share.

1.4.4. Teacher Roles in Active Teaching. The teacher's role is to guide and facilitate learning, study, investigation, interstudent dialogue, communication, free flow of ideas, and cooperation. In addition, the teacher should provide an adequate psychological atmosphere inside or outside the classroom, allowing students to cooperate and communicate and acquire knowledge, skills, desired trends, and values [17].

1.4.5. Training Needs. Training needs are the sum of the changes required to be conducted by the teacher regarding information, experiences, performance, behavior, and trends to better situate them for the job. They indicate the difference between individuals' current and desired performance due to their lack of knowledge, capabilities, and skills [6]. The training process is the process of providing employees with the appropriate skills and knowledge to perform a specific job. It is a planned procedure aimed at empowering employees with the information and skills necessary to improve their performance. According to Mohamad and Al-Faqih [33] and Nassar [34], a training strategy correlates with the organization's strategy. The training strategy should be based on threats, opportunities, weaknesses, and strengths in the work environment to meet challenges and utilize available environmental opportunities. Devising training objectives depends on strategic analysis to ensure its integration within the organization's strategy.

Shoaib and Asfour [13] indicated that training while serving as faculty members is one of the most important aspects of developing the teaching process and faculty members' performance. Therefore, some universities make it a necessary condition for practicing the profession. Some university staff training programs tend to make it one of the responsibilities of the university that attract specialists and qualified experts to develop the capabilities of university teachers. The results of a study clarify this more [18], focusing on the necessity of workshops, courses, and training programs covering how to employ modern teaching strategies and methods at the university level.

2. Methods

2.1. Research Community and Sample. The study population consisted of all staff at the UOH. A stratified random sample was selected from the research community, consisting of 164 individuals representing the university colleges as shown in Table 1.

2.2. Approach. The researcher used descriptive and analytical approaches due to the nature of the study.

2.3. Limitation. The study was conducted during the academic year 2019/2020 at UOH and its branches. The study included a sample of the staff in health, engineering, and humanitarian colleges.

2.4. Study Tool (e-Questionnaire). The general purpose of the tool was "Determining the reality of the use of MTM by staff at the UOH and determining training needs from their point of view and the training method that meets their needs." The questionnaire phrases were drafted and presented to experts to review and agree upon. Then, it was uploaded to Google Drive.

The questionnaire was tailored to the study, down to its objectives and questions, data and information required, and perusal of the literature and previous studies. The questionnaire had five main axes: The first axis was UOH staff's extent of MTM use, including 11 modern strategies accessed through analyzing previous sources and studies and the researcher's experience in the field of university teaching. The second axis was the reasons for MTM use, consisting of 11 reasons. The third axis was the obstacles to MTM use from the staff's point of view, amounting to 11 difficulties. The fourth axis was training needs required for MTM. And the fifth axis was the proposed training methods to develop staff's MTM use.

To ensure the questionnaire's validation, it was distributed to 50 university staff members outside the research sample. The correlation coefficients of the items of the questionnaire with the total score were extracted for each item in the form of a correlation coefficient between each item and the total score, each item and its correlation with the axis to which it belongs, and each axis and the total score. The correlation coefficients of the items with the axis were 0.52–0.88 and with the tool as a whole were 0.46–0.87, as in Table 2.

From Table 2, all the correlation coefficients were of acceptable degrees and statistically significant. Therefore, none of these paragraphs was omitted. Regarding correlation coefficients between the dimensions to each other and the tool as a whole, Table 3 details them.

2.5. Stability. The tool's stability was ascertained via testing-retesting by distributing it to 50 staff members outside the research sample for two times separated by two weeks. The Pearson correlation coefficient was calculated between the two applications, and the stability (internal consistency)

Table 1: A description of the variables of the study sample.

No.	Variable	Level	No.	Percentage
1	Gender	Male	104	63.4
		Female	60	36.6
		Total	164	100
2	Years of experience	Less than 10 years	41	25
		From 10 years to 15 years	48	29.3
		Over 15 years	75	45.7
		Total	164	100
3	Academic rank	Professor	3	1.8
		Associate professor	47	28.6
		Assistant professor	61	37.1
		Lecturer	53	32.3
		Total	164	100
4	Academic specialization	Geometry	41	25
		Healthy	48	29.2
		Humanitarian	75	45.7
		Total	164	100

between the paragraphs was calculated using the Cronbach alpha. The overall stability factor was 0.95, while the overall stability coefficient was 0.94. These values were acceptable. Table 4 illustrates this.

3. Results

To answer the 1st question, averages and standard deviations were calculated for the questionnaire responses on the reality of the use of MTM by the UOH staff in the first axis. Table 5 illustrates these results.

From Table 5, the general average of responses on the first axis was 1.94, indicating that there is an agreement to a degree ("use somewhat") in the first axis: the degree of use. The value of the standard deviation of the general mean of the axis was 0.184, indicating a significant heterogeneity of responses.

The results indicate that the research sample uses MTM to some extent. This is attributable to their tendency to use nontraditional teaching methods and awareness of the importance and observance of educational principles that contribute to preparing the integrated personality of the learner during the COVID-19 pandemic, besides their observance of individual differences between learners and previous experiences.

To answer the 2nd question, the averages and standard deviations were calculated for the questionnaire responses concerning the use of MTM by the UOH staff in the second axis, as shown in Table 6.

Table 6 shows that the general average on the second axis was 2.20, indicating that there is an agreement on the paragraphs of the axis. The value of the standard deviation of the general mean of the axis was 0.242, which is an indication of the homogeneity of the sample responses.

To answer the 3rd question, averages and standard deviations were calculated for the questionnaire responses concerning the UOH staff that uses MTM, as in Table 7.

Table 7 shows that the general average of the sample responses on the 3rd axis was 1.55, indicating that there is a consensus (disagreement) with the paragraphs of the questionnaire in the third axis. The value of the standard deviation of the general mean of the axis was 0.225, indicating the homogeneity of responses.

This could be due to the staff's mastery of modern teaching strategies and their realization of their real role when implementing these strategies consistently when achieving an awareness of the student's role during implementation.

The staff's disagreement with these obstacles could be an indication of their lack of need for these methods from their point of view. For example, the last of these obstacles came in the case of disagreement, "it does not take into account individual differences." They see that MTM has the strength to stimulate students and account for individual differences. They see that their capacity to use MTM is one of the factors that helps in overcoming these obstacles. Also, in second place came "I see that it consumes the time and effort of the university teacher" because it requires effort and preemptive preparation. The third obstacle was the degree of disagreement "I feel that I need training beforehand on how to use them," indicating their awareness of MTM's importance and their need to train on them.

To answer the 4th question, averages and standard deviations were calculated for the questionnaire responses concerning the UOH staff's use of MTM. Table 8 illustrates these results.

Table 8 shows that the general average of the sample responses on the fourth axis was 1.86, indicating the agreement with the degree of need (medium) for the paragraphs of the fourth axis. The standard deviation of the general mean of the axis was 0.196, indicating the homogeneity of responses.

The averages for the items in Table 9 show an urgent need to identify and train the staff on half of the elements of this axis, lying between high and medium within 1.12–2.46.

This is explained by the fact that the staff believe that they need to know everything related to these methods that focus on self-learning due to their direct impact on the educational process during the COVID-19 pandemic: their motivation, eagerness to stimulate students, and their involvement in the educational situation.

Table 2: The correlation coefficient values between the paragraphs of the tool and the dimension to which it belongs and its overall mark.

Paragraph no.	Correlation coefficient with the axis	Correlation coefficient with the tool	Paragraph no.	Correlation coefficient with the axis	Correlation coefficient with the tool
1	0.70	0.53	**29**	0.83	0.74
2	0.76	0.65	**30**	0.48	0.49
3	0.60	0.54	**31**	0.70	0.53
4	0.70	0.53	**32**	0.71	0.87
5	0.66	0.46	**33**	0.82	0.55
6	0.59	0.73	**34**	0.82	0.55
7	0.48	0.49	**35**	0.50	0.65
8	0.62	0.78	**36**	0.83	0.74
9	0.82	0.55	**37**	0.70	0.53
10	0.70	0.53	**38**	0.66	0.46
11	0.76	0.65	**39**	0.59	0.73
12	0.66	0.46	**40**	0.48	0.49
13	0.59	0.73	**41**	0.62	0.78
14	0.48	0.49	**42**	0.50	0.65
15	0.59	0.73	**43**	0.71	0.87
16	0.48	0.49	**44**	0.82	0.55
17	0.48	0.49	**45**	0.83	0.74
18	0.62	0.78	**46**	0.66	0.46
19	0.83	0.74	**47**	0.50	0.65
20	0.66	0.52	**48**	0.71	0.87
21	0.48	0.49	**49**	0.82	0.55
22	0.70	0.53	**50**	0.83	0.74
23	0.50	0.65	**51**	0.70	0.53
24	0.71	0.87	**52**	0.66	0.46
25	0.82	0.55	**53**	0.59	0.73
26	0.82	0.55	**54**	0.48	0.49
27	0.59	0.73	**55**	0.62	0.78
28	0.73	0.59			

Table 3: The correlation coefficient values between the questionnaire's axes to each other and the tool as a whole.

Axes	MTM	Reasons	Barriers	Training needs	Training methods	The tool as a whole
MTM	1.0	0.87**	0.69**	0.72*	0.71**	0.88**
Reasons		1.0	0.64**	0.68*	0.68**	0.86**
Barriers			1.0	0.76*	0.69*	0.90**
Training needs				1.0	0.70*	0.92**
Training methods					1.0	0.89**
The tool as a whole						1.0

*Statistical significance at the level of significance 0.05. **Statistical significance at the level of significance 0.01.

Table 4: The coefficient of internal consistency, Cronbach's alpha, return constancy of the axes, and the total score.

Axes	Repetition constancy (Pearson correlation coefficient)	Internal consistency (Cronbach's alpha)
MTM	0.92	0.85
Reasons	0.86	0.88
Barriers	0.93	0.94
Training needs	0.92	0.91
Training methods	0.91	0.93
The tool as a whole	0.94	0.95

To answer the 5th question, the averages and standard deviations of the sample responses were calculated for the questionnaire on the UOH staff's use of MTM, as in Table 9.

Table 9 shows that the general average of responses on the fifth axis was 2.17, indicating that there is a consensus to a degree (somewhat agree) in the fifth axis. The standard deviation of the general mean of the axis was 0.376, indicating homogeneity among the responses.

To answer the 6th question, "Are there statistically significant differences at a significance level of 0.05 in the responses to the questionnaire on the use of MTM by the UOH Staff due to a specific variable (gender, academic rank,

Table 5: Means and standard deviations for the questionnaire in the first axis: the degree to which UOH staff use MTM.

Rank	No.	MTM	Mean	Standard deviation	Degree of use
15	**1**	Problem solving	2.46	0.620	Use
4	**2**	KWL teaching cognitive	1.24	0.431	I do not use
16	**3**	Mind maps	2.32	0.707	Use somewhat
10	**4**	Cognitive load	1.23	0.441	I do not use
8	**5**	Brainstorming	2.18	0.703	Use somewhat
14	**6**	Inductive learning	2.24	0.734	Use somewhat
7	**7**	Inquiry learning	1.28	0.464	I do not use
5	**8**	Guided discovery	2.25	0.620	Use somewhat
3	**9**	Project-based	2.31	0.616	Use somewhat
13	**10**	Reciprocal learning	2.37	0.638	Use
12	**11**	Think-pair-share	1.30	0.536	I do not use
1	**12**	Peer evaluation	1.32	0.530	I do not use
11	**13**	Learning by modeling	2.62	0.568	Use
9	**14**	Mastery learning	1.35	0.571	I do not use
6	**15**	Roleplaying	2.20	0.792	Use somewhat
2	**16**	Peer learning	2.26	0.732	Use somewhat
The first axis: the degree to which the UOH staff use MTM			1.94	0.184	Use somewhat

The averages for the items of this axis were 1.23–2.62.

Table 6: The averages and standard deviations of the paragraphs of the questionnaire in the 2nd axis: the reasons for the use.

Rank	No.	Item	Mean	Standard deviation	Degree of use
2	**1**	Its ability to stimulate students' thinking and attention	2.38	0.729	I agree
10	**2**	It emphasizes the interaction between teacher and learner during its implementation	2.00	0.636	I somewhat agree
9	**3**	Its suitability for the scientific content and the nature of the course	2.09	0.750	I somewhat agree
4	**4**	Feel its effectiveness in achieving its goals	2.31	0.679	I somewhat agree
5	**5**	I think it takes into account individual differences	2.21	0.624	I somewhat agree
3	**6**	Suitable for the available financial capabilities	2.35	0.592	I agree
1	**7**	Mastery of how to use it	2.40	0.653	I agree
6	**8**	It fits the modern teacher's role as a mentor	2.12	0.681	I somewhat agree
8	**9**	I think it saves the professor's time and effort	2.04	0.664	I somewhat agree
7	**10**	Feel the students enjoy using it in the educational process	2.11	0.758	I somewhat agree
		The 2nd axis: the reasons for use	2.20	0.242	I somewhat agree

Table 7: The averages and standard deviations of the paragraphs of the questionnaire in the 3rd axis: obstacles to the staff's use of MTM at the UOH.

Rank	No.	Item	Mean	Standard deviation	Degree of use
5	1	It is weak in terms of stimulating students' thinking and attention	1.57	0.565	I do not agree
8	2	Poor interaction between teacher and learner during implementation	1.26	0.438	I do not agree
4	3	Not suitable for the scientific content	2.04	0.668	I agree to some extent
9	4	I do not feel its effectiveness in achieving its goals	1.24	0.431	I do not agree
10	5	I think it does not take into account individual differences	1.21	0.467	I do not agree
1	6	Its suitability for the financial capabilities available at the university	2.45	0.620	I agree
3	7	I feel I need to practice beforehand	2.13	0.761	I agree to some extent
7	8	It does not fit into the modern teacher's role (as a mentor)	1.28	0.451	I do not agree
2	9	It consumed the university professor's time and effort	2.16	0.759	I agree to some extent
6	10	I feel distressed among students when using it	1.37	0.485	I do not agree
		The 3rd axis: obstacles to the use of MTM by the staff at the UOH	1.55	0.225	I do not agree

Table 8: Averages and standard deviations of the questionnaire paragraphs in the fourth axis: the training needs of staff at the UOH for MTM.

Rank	No.	MTM	Mean	Standard deviation	Degree of use
10	**1**	Problem-solving	1.61	0.645	Weak
1	**2**	KWL teaching cognitive	2.46	0.620	High
16	**3**	Mind maps	1.12	0.328	Weak
2	**4**	Cognitive load	2.45	0.620	High
15	**5**	Brainstorming	1.21	0.407	Weak
9	**6**	Inductive learning	2.06	0.680	Medium
5	**7**	Inquiry learning	2.35	0.643	High
8	**8**	Guided discovery	2.16	0.767	Medium
12	**9**	Project-based	1.31	0.464	Weak
3	**10**	Reciprocal learning	2.38	0.704	High
4	**11**	Think-pair-share	2.36	0.713	High
14	**12**	Peer evaluation	1.27	0.444	Weak
7	**13**	Learning by modeling	2.19	0.748	Medium
11	**14**	Mastery learning	1.36	0.481	Weak
13	**15**	Roleplaying	1.30	0.459	Weak
6	**16**	Peer learning	2.21	0.747	Medium
The fourth axis: the training needs of staff at the UOH for MTM			1.86	0.196	Medium

years of experience, or academic specialization)?," the following was done:

(i) Comparison by gender: a *T*-test was used to compare responses according to gender, as in Table 10:

For the first axis, Table 11 shows that the value of the *t*-test was 0.932 with the level of significance as 0.353, a nonstatistically significant value at a level of significance of 0.05 among the averages of responses according to gender in the first axis. Regarding the second axis, the value of the *t*-test was 0.369 with a level of significance of 0.712, which is statistically nonsignificant at a level of 0.05 among the averages of gender-based responses. Regarding the third axis, the value of the *t*-test was 0.104, with a level of significance of 0.918, which is statistically nonsignificant at a level of 0.05 among the gender-based averages of responses. Concerning the fourth axis, the value of the *t*-test was 1.498 at a level of significance of 0.063, which is a nonstatistically significant value at a level of 0.05 among the averages of gender-based responses. Finally, for the fifth axis, the *t*-test was 1.737, with a level of significance of 0.084, which is nonstatistically significant at a level of 0.05 among the averages of the gender-based responses.

(ii) Comparison by academic rank: the monoanalysis of the variance F-test was used to compare responses according to the academic rank as shown in Table 10:

Regarding the results of the first axis, the *F*-test value was 2.048 with a statistical significance of 0.109, statistically nonsignificant at 0.05. This indicates that there are no statistically significant differences at 0.05 regarding scientific rank. Regarding the second axis, the *F*-test result was 0.110 with a statistical significance of 0.954 which was statistically nonsignificant at 0.05. There are statistically nonsignificant differences at 0.05 in the second axis according to the scientific rank. Regarding the third axis, the *F*-test result was 0.187 with a statistical significance of 0.905, which is statistically nonsignificant at 0.05. There are no statistically significant differences at 0.05 according to academic rank. Concerning the fourth axis, the *F*-test result was 0.761 with a statistical significance of 0.518, statistically nonsignificant at 0.05. There are no statistically significant differences at 0.05 in the fourth axis per scientific rank. Finally, the fifth axis *F*-test result was 0.841 with a statistical significance of 0.473. It is statistically nonsignificant at 0.05. There are no statistically significant differences at 0.05 in the fifth axis per scientific rank. This agrees with the findings of Barhoum, [35]; Al-Balawi [20]; Al-Khalifah and Farhan [21]; and Nassar [34].

(iii) Comparison according to years of experience: the monoanalysis of the variance *F*-test was used to compare the sample responses according to the years of experience as in Table 12.

For the first axis, the *F*-test result was 0.267 with a statistical significance of 0.766, statistically nonsignificant at 0.05. There are no statistically significant differences at 0.05 in the first axis according to years of experience. Regarding the second axis, the *F*-test result was 0.327 with a statistical significance of 0.722. It is statistically nonsignificant at 0.05. There are no statistically significant differences at 0.05 in the second axis according to years of experience.

Table 9: The averages and standard deviations of the questionnaire, in the fifth axis: the proposed training methods to develop the skills of staff at the UOH in the use of MTM.

Rank	No.	The format of the proposed training	Mean	Standard deviation	Degree of approval
3	3	Theoretical-practical	1.70	0.628	I somewhat agree
2	2	My application is practical	2.29	0.681	I somewhat agree
1	1	Electronic	2.51	0.722	I agree
The fifth axis: the proposed training methods to develop the skills of the UOH staff on the use of MTM			2.17	0.376	I somewhat agree

Table 10: Results of the F-test for a comparison between the averages of responses to the questionnaire on the reality of the use of MTM by staff at the UOH according to academic rank.

Axis	Sources of variance	Sum of squares	Degrees of freedom	Average of squares	F-test	Statistical significance
First	Between groups	.0.204	3	0.068	2.048	0.109
	Within groups	5.300	160	0.033		
	Total	5.504	163			
Second	Between groups	0.020	3	0.007	0.110	0.954
	Within groups	9.559	160	0.060		
	Total	9.579	163			
Third	Between groups	0.029	3	.0.010	0.187	0.905
	Within groups	8.198	160	0.054		
	Total	8.227	163			
Fourth	Between groups	0.088	3	0.029	0.761	0.518
	Within groups	6.165	160	0.039		
	Total	6.253	163			
Fifth	Between groups	0.357	3	0.119	0.841	0.473
	Within groups	22.643	163	0.142		
	Total	23.000	163			

Regarding the third axis, the F-test result was 0.108 with a statistical significance of 0.898, statistically nonsignificant at 0.05. There are no statistically significant differences at 0.05 in the third axis according to years of experience. Concerning the fourth axis, the F-test result was 0.445 with a statistical significance of 0.641, statistically nonsignificant at 0.05. There are no statistically significant differences at 0.05 in the fourth axis according to years of experience. Finally, for the fifth axis, the F-test result was 1.413 with a statistical significance of 0.247, statistically nonsignificant at 0.05. There are no statistically significant differences at 0.05 in the fifth axis according to years of experience.

Years of experience did not affect MTM teaching strategies or training needs. This can be attributed to the university's keenness to continuously improve the expertise of faculty members by enrolling them in training courses on MTM. Also, it may be attributed to promotion prerequisites. These results agree with Sakkar [27]; Al Asmari [15]; Al-Khalifa and Farhan [21]; Nassar [34].

(iv) Comparison according to academic specialization: The monoanalysis of the variance F-test was used to compare responses according to academic specialization as in Table 13.

In the first axis, the F-test result was 1.981 with a statistical significance of 0.141, statistically nonsignificant at 0.05. There are no statistically significant differences at 0.05 in the first axis according to the academic specialization. For the second axis, the F-test result was 0.278 with a statistical significance of 0.758, statistically nonsignificant at 0.05. There are no statistically significant differences at 0.05 in the second axis according to the academic specialization. Regarding the third axis, the F-test result was 0.012 with a statistical significance of 0.988, statistically nonsignificant at 0.05. There are no statistically significant differences at 0.05 in the responses to the third axis according to the academic specialization. Regarding the fourth axis, the F-test result was 2.107 with a statistical significance of 0.125, statistically nonsignificant at 0.05. There are no statistically significant differences at 0.05 in the fourth axis according to the academic specialization. Finally, the fifth F-test result was 0.258 with a statistical significance of 0.773, statistically nonsignificant at 0.05. There are no statistically significant differences at 0.05 in the fifth axis according to the academic specialization.

4. Discussion

The results showed that the most important reason for using MTM during the COVID-19 pandemic was "Mastery of how to use it." This is attributed to the staff's love for their profession and MTM and their adaptability to the pandemic. These results

Table 11: Results of a t-test for a comparison between the averages of responses to the questionnaire on the reality of the use of MTM by the staff at the UOH by gender.

The axis	Gender	No.	Mean	Standard deviation	t-value	Statistical significance
First	Male	104	1.95	0.191	0.932	0.353
	Female	60	1.92	0.171		
Second	Male	104	2.20	0.242	0.369	0.712
	Female	60	2.21	0.244		
Third	Male	104	1.55	0.245	0.140	0.918
	Female	60	1.56	0.186		
Fourth	Male	104	1.86	0.180	1.498	0.063
	Female	60	1.91	0.214		
Fifth	Male	104	2.13	0.389	1.737	0.084
	Female	60	2.23	0.343		

Table 12: Results of the F-test for a comparison of the averages of responses to the questionnaire on the reality of the use of modern teaching methods by the staff at the UOH according to the years of experience variable.

Axis	Sources of variance	Sum of squares	Degrees of freedom	Average of squares	F-test	Statistical significance
First	Between groups	0.018	2	0.099	0.267	0.766
	Within groups	5.485	161	0.034		
	Total	5.504	163			
Second	Between groups	0.039	2	0.019	0.327	0.722
	Within groups	9.540	161	0.059		
	Total	9.579	163			
Third	Between groups	0.011	2	0.005	0.108	0.898
	Within groups	8.216	161	0.051		
	Total	8.227	163			
Fourth	Between groups	0.034	2	0.017	0.445	0.641
	Within groups	6.218	161	0.039		
	Total	6.253	163			
Fifth	Between groups	0.397	2	0.198	1.413	0.247
	Within groups	22.603	161	0.140		
	Total	23.000	163			

Table 13: Results of the F-test for a comparison between the averages of responses to the questionnaire on the use of MTM by faculty members at the UOH according to the variable of the academic specialization.

Axis	Sources of variance	Sum of squares	Degrees of freedom	Average of squares	F-test	Statistical significance
First	Between groups	0.132	2	0.066	1.981	0.141
	Within groups	5.371	161	0.033		
	Total	5.504	163			
Second	Between groups	0.033	2	0.016	0.278	0.758
	Within groups	9.546	161	0.059		
	Total	9.579	163			
Third	Between groups	0.001	2	0.001	0.012	0.988
	Within groups	8.226	161	0.051		
	Total	8.227	163			
Fourth	Between groups	0159	2	0.080	2.107	0.125
	Within groups	6.093	161	0.038		
	Total	6.253	163			
Fifth	Between groups	.0.073	2	0.037	0.773	0.258
	Within groups	22.927	161	0.142		
	Total	23.000	163			

could be linked to other personal variables and aptitudes, confirmed by the phrase "its ability to stimulate the thinking and attention of students," which came in second place in the list of reasons for use. This indicates the faculty's awareness on the importance of the paradigm shift from the teacher as a provider of knowledge to the student as an acquirer of knowledge. It is necessary to use methods that incentivize learning. This agrees with the findings of Ito and Kawazoe [25], Dann, [32] and Awad [6] but disagrees with those of Al-Khalifa and Farhan [21] and Al-Ami and Laftah [36], revealing that faculty members spend lecture time transmitting information, besides the apparent faculty members' lack of knowledge of modern teaching methods.

The results also indicate a preference for instructional methods, where students interact within activities until they achieve educational goals. The results show that the modeling learning method came up with the highest average, explainable by the fact that the modeling learning method is characterized by providing information and forming a mental perception of the relationships between objects, phenomena, or events using facilitated simulations with explanation, interpretation, and prediction through two important means: sound and image. These media allow students to receive information in more than one sense and to fix the information. Faculty members preferred this strategy as it helps students learn according to their abilities and understanding, prompting them to interact. Problem solving came in second place, confirming the preference of assigning students active roles according to the available possibilities in recognition of the importance of diversifying teaching strategies through holding workshops, courses, and training programs related to how to employ teaching strategies and methods at the undergraduate level.

This agrees with the findings of Al-Khalifah and Farhan [21] and Mahasneh et al. [18], who confirmed the high degree of staff familiarity with modern teaching strategies and methods. However, it disagrees with the results of Al-Balwi [20] and Alhirtani [1], whose results revealed that peer-teaching strategies and peer evaluation came in last among modern teaching strategies, while lectures were the most common method due to lecturers' inability to apply some modern teaching methods.

These results are attributed to the staff's awareness of the importance of modern teaching methods and their ability to overcome learning problems during the COVID-19 pandemic, and that is what the University of Hail offers in the field of professional growth, enhancing their self-confidence and providing necessary information, trends, and skills. Therefore, their training needs came in the middle degree, confirmed by the results of the previous axis that MTM are used at a degree "to some extent" from their point of view, and the results are consistent with those of Rababa'a [19], Al-Balawi [20], and Abu Al-Fadl (2014) that indicated the need to be trained in the use of teaching methods related to developing scientific thinking skills and the KWL method. The aforementioned study agreed that the need for staff training was moderate. These results differ from the findings of Abdelali (2012) and Rababa'a [19], who believed that the staff's need to train was high.

The results indicate no statistically significant differences attributed to gender, academic rank, years of experience, or academic specialization, agreeing with the findings of Al-Balawi [20], Khalifah and Farhan [21], and Mahasna et al. [18] while differing with those of Sakr's study [27], which found differences in favor of males. This may be attributable to the fact that the UOH faculty staff, regardless of their specializations (engineering/health/humanitarian), are aware of the importance of training needs as per their professional roles during the COVID-19 pandemic. Their responses did not vary according to the variation in specialization. The results of the study disagree with those of Al-Asmari [15], Al-Khalifah and Farhan [21], Barhoum, [35] and Al-Shehri [14], illustrating differences in the responses of faculty members to their training needs as per academic specialization.

5. Conclusion

The study aimed to evaluate the UOH staff's use of MTM during the COVID-19 pandemic, identify the most important causes of use, obstacles, and foremost training needs and their implementation, and reveal significant individual differences in the extent of MTM usage—attributed to gender, academic rank, experience, or academic specialization.

The study found that the staff use MTM due to their awareness on their importance and observance of many educational principles that contribute to preparing and refining the balanced and integrated personality of the learner. Moreover, the results indicated the importance of electronic and applied training on MTM usage to improve university education outcomes. It is necessary to know everything related to these active learning and continuous education focused methods due to their direct impact on the educational process in terms of enhancing confidence and learning motivation of students. Academic rank, years of experience, and academic specialization did not influence training needs.

The results also highlighted the importance of sufficient preparation of faculty members to use MTM effectively (through training on mind maps, cognitive burden, inductive learning, directed discovery, and project-based teaching), upgrading university buildings to form an ideal classroom/laboratory MTM-friendly environment, and working to motivate them to use active learning strategies, provided that the training needs be among the principles of evaluating faculty members. It is recommended to study teaching strategies' effectiveness from the University of Hail student's viewpoint during the COVID-19 outbreak to investigate activities to develop some effective teaching methods among university faculty members. Also, it is important to research the relationship between the teaching practices of staff and the development of some variables (such as thinking/self-organization) among students.

Data Availability

The data will be made available upon request to the author.

Conflicts of Interest

The author declares no conflicts of interest.

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