Reality of Using the E-Learning for Teaching Agricultural Sciences According to the Instructors and Students' Opinions Considering the Corona Pandemic

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Abstract:

The study targeted to explore the reality of using e-learning for teaching agricultural sciences according to the instructors' and students' opinions considering the corona pandemic. A questionnaire was prepared to consist of four main dimensions: the challenges of using e-learning, the range of students' interaction with this type of education, the teachers' own acceptance of it, and their views on the continuity of teaching agricultural sciences using e-learning. The research tool was applied to a sample consisting of 150 including 60 teachers and 90 students. The results revealed average estimates of the total scale and a high degree of the dimension of the challenge. As it became clear that there are great challenges in this type of education and the weak desire of the participants for the continuity of e-learning. The study recommends the need to focus on the challenges facing e-learning and recommended the use of electronic tools in teaching agricultural sciences in part, and not relying on them entirely, considering their practical and skilled nature.

Key words: E-Learning, Teaching, Agricultural sciences, Corona pandemic

واقع استخدام التعلم الإلكتروني في تدريس العلوم الزراعية من وجهة نظر المعلمين والطلاب في جائحة كورونا

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مستخلص :

هدفت الدراسة إلى استكشاف واقع استخدام التعلم الإلكتروني لتدريس العلوم الزراعية وفق آراء المعلمين والطلاب فى جائحة كورونا. تم إعداد استبيانه موجة للمعلمين وتتكون من أربعة أبعاد رئيسية: تحديات استخدام التعلم الإلكتروني ، ومدى تفاعل الطلاب مع هذا النوع من التعليم ، وقبول المعلمين له ، وآرائهم حول استمرارية تدريس العلوم الزراعية باستخدام التعلم الإلكتروني.واستبيانه موجة للطلاب وتتكون من أربعة أبعاد رئيسية: تحديات استخدام التعلم الإلكتروني ، ومدى تفاعل الطلاب مع هذا النوع من التعليم ، وقبول المعلمين له ، وآرائهم حول استمرارية تدريس العلوم الزراعية باستخدام التعلم الإلكتروني تم تطبيق أداة البحث على عينة مكونة من 150 معلمًا منهم 60 معلمًا و 90 طالبًا. كشفت النتائج عن متوسط تقديرات المقياس الكلي ودرجة عالية لأبعاد التحدي. كما اتضح أن هناك تحديات كبيرة في هذا النوع من التعليم وضعف رغبة عينة البحث في استمرارية التعلم الإلكتروني. أوصت الدراسة بضرورة التركيز على التحديات التي تواجه التعلم الإلكتروني ، وأوصت باستخدام الأدوات الإلكترونية في تدريس العلوم الزراعية جزئياً ، وعدم الاعتماد عليها كليا نظرا لطبيعتها العملية والمهارية.

الكلمات المفتاحية: التعليم الإلكتروني ، تدريس العلوم الزراعية، جائحة كرونا

Introduction:

Since the COVID-19 pandemic became spread enormous sectors have been affected, for example health, business, tourism and education. With the death rate increasing around the world, most of countries have decided to close universities, colleges and schools.   In countries where Internet connections are poor or lack infrastructure, such as computers; the closure of instructional institutions has interrupted pupils learning (Schleicher, 2020). Nevertheless, teaching and learning processes have shifted to online learning in countries with credible information and communication technology (Di Pietro, et al., 2020).

Due to the increase in cases of the Corona 19 epidemic, and the precautions taken by many countries of the world, this led to the closure of schools and universities, as well as an impact on the economic situation of families.

Also, the total closure led to the family staying at home for a longer period, which affects the presence of a comfortable, and encouraging place to study online (Schleicher, 2020; Zhang, et al., 2020).

In addition to that, instructors need to plan a new strategy of teaching and learning that may require supplemental technological and pedagogical practice (Ashraf, et al., 2021; Li, et al., 2021). This is the major challenge for many instructors who have been concentrating on traditional teaching techniques (Ashraf, et al., 2021; Tsegay, 2015). Contrariwise, research indicates that instructors who are habituated to deal with technology can adapt for online learning quickly (Garrison&

Vaughan, ,2008). Besides, teachers' conception of interactive learning practices and theories impact their vision of conducting various learning activities in the classroom (Ertmer, 2005).

Digital learning or distance learning is a type of teaching that has been spoken about for an extended period and arguing about the necessity to use it into the educational activities before the pandemic is appeared.

However, it has become a substitutional and demanding necessity for ongoing education in circumstances that require physical distancing (Ferreiman, 2014; Berg& Simonson, 2018).

Koumi (2006) confirms that e-learning turned up as a outcome of technological developments, particularly after the educational activities were impacted by the automation of industry directly and the development of "Artificial Intelligence" and "Internet of Things" technology; furthermore, the information technology revolution, Which got into the classroom and became an integral part of it (Koumi, 2006).

E-learning has a significant and fundamental role in the success of the educational operation, in light of the huge technological development and with the spread of modern means of communication from multiple media, computer, and the Internet, for instance: image, audio, and video, which are instruments that allowed unnumbered of people to receive education with less time and effort and with ease and ease (Ferreiman, 2014; Hetsevich, 2017).

Due to the conditions that the whole world is currently experiencing, represented by the distribution of the Corona virus, educational

institutions unexpectedly found themselves have to transform to distance learning to guarantee the continuity of the teaching and learning procedures, and to utilize the Internet, smart phones and computers in remote communication with learners (Yulia, 2020).

E-learning is the process of replacing distance learning using electronic means of communication with face-to-face interaction in the classroom to achieve the planned educational outcomes. E-learning can be used in teaching agricultural sciences. Hence, according to recommendations for development of agricultural education in light of the newest curricula (Elmeanawy, et al. 2021). the most important question remains: Is e-learning effective in teaching sciences of a professional / literal nature, as the current research seeks to determine the reality of using e-learning in teaching agricultural sciences, considering of experts and students.

Study problem:

Using technological tools in teaching activities is one of the major challenges encountered by the educational system in different ways, especially due to the number of students has increased. Furthermore, the traditional approach is not able to meet all demands of learners. It can be seen that the corona pandemic influenced students' presence at the camps. Thus, the current research problem represented in determining the reality of using e-learning in agriculture secondary schools from the points of view's the instructors and their students. Therefore, what can be said is that the study targeted to answer the following major question: **what is reality of using the e-learning for**

teaching agricultural sciences according to the instructors and students' opinions considering the corona pandemic?

The sub-questions are derived from the major question:

— What is reality of using the e-learning for teaching agricultural sciences according to the instructors' opinions considering the corona pandemic?

— What is reality of using the e-learning for teaching agricultural sciences according to the students' opinions considering the corona pandemic?

— Are there differences between the opinions of teachers and students regarding the reality of using e-learning in teaching agricultural sciences?

Study Objectives:

— The study aimed to determine the reality of using e-learning in teaching agricultural sciences.

— Determine if there are differences between the opinions of teachers and their students regarding the use of e-learning.

— Measuring the reality of using e-learning through four dimensions (obstacles, continuity, student interaction and teacher interaction.

— Providing recommendations regarding the future of using electronic learning in agricultural secondary schools.

Procedures:

This part deals with a description of the study methodology and its personnel, as well as a description of the study's tools, procedures, and statistical treatment that were used in it.

1. **Study method:**

This study depended in its procedures on the descriptive analytical methodology (survey), which depends on gathering data from sample of the study, by hiring a questionnaire is prepared for the objectives of this study.

2. **Participants:** Table (1) shows the participants in detail, as follows:

Table (1): participants.

Sample	N	Gender		Province		
		Male	Female	Gharbia	Dakahlia	Kafr-El Sheikh
Teachers	60	21	39	25	19	16
Students	90	32	58	40	28	22
Total	150	53	97	65	47	38

3. **Study instrument:**

To attain the objectives of this study, a questionnaire is built by the researchers. it is consisting of forty clauses and two open-ended questions, and it was directed to instructors working at agricultural secondary schools who try practiced e-learning during the time of the crisis of the Corona virus, and their students, as well. (there is two copy of the study instrument, one of them for the instructors and another copy for their learners). The researchers prepared the

questionnaire by looking at studies such as **Yulia's study, (2020) and Basilaia's study, (2020)** Furthermore, the researchers benefited from the standards used in earlier studies, and chose and reformulated some clauses, and formulated some items in the light of the theoretical framework about distance learning, and the questionnaire became in its eventual form consisted of (40) clause, and corresponding to a three-point scale (agree = 3, neutral = 2, disagree = 1) and the questionnaire clauses were divided into four sections: E-learning continuity: This field includes (13) phrases. Obstacles to e-learning: This field included (7) phrases. Teachers' interaction with e-learning: This field included (7) phrases. Students' interaction with e-learning: This field included (13) phrases and two open-ended questions in the end of the instrument.

4. **The instrument validation:**

The questionnaire was given in its initial copy to referees who have experience and competence in the scientific research and teaching with the goal of arbitrating the clauses of the questionnaire and knowing the degree of its comprehensiveness and clarity. Moreover, define the extent of formulation appropriateness, and the expression of opinion about the correcting method the questionnaire. The referees focused on the linguistic reformulation of some of the clauses; therefore, the researchers modified the questionnaire in the light of arbitrators' opinions.

5. **The instrument Stability:**

   The questionnaire was applied electronically to a pilot sample other than the real sample consisting of 60 members of the teaching staff and Students. The Cronbach's Alpha test was utilized to test the questionnaire stability. The stability rate was (0.80) The values of the reliability coefficients for the resolution axes ranged between 0.73 and 0.89.

6. **Statistical analysis:**

   Data were gathering by the study instrument, then unloaded into an Excel file, organized and entered the statistical program (SPSS) to analyze the study data after coding the answers. Where descriptive statistics were followed to calculate such as the arithmetic means and standard deviations.

   ## Results:

   The results were presented and analyzed in the light of the study questions sequence, as follow:

   Firstly: what is reality of using the e-learning for teaching agricultural sciences according to the instructors' opinions considering the corona pandemic?

   To analyze the study results, some the statistical techniques were followed, and the results were come as follow:

Table (2): Results of the dimension of e-learning questionnaire according to the instructors' opinions.

Rank	Dimension	Sample	Number of phrases	Total score	mean	Standard deviation	Score
1	Obstacles to E-learning in teaching agricultural sciences.	60	7	21	16.34	4.87	**High**
2	Continuity of E-learning considering the spread of Corona.	60	13	39	25.98	6.45	**Moderate**
3	Teachers' interaction with E-learning considering the Corona crisis	60	7	21	13.67	3.23	**Moderate**
4	Students' interaction with E-learning.	60	13	39	**16.31**	**3.23**	**Low**
	Total	60	40	120	72.2	8.4	**Moderate**

It's clear from table (2) that the aspect of E-learning Obstacles came at top rank with a mean 16.34 and SD 4.87 with a high score.

The field of E–learning continuity considering the spread of Corona came with a mean 25.98 and a SD 6.45 with a medium score. while the field of teachers' interaction with e–learning came with a mean 13.67 and a SD 3.23 in the third rank with a medium score. Finally, the field of students' interaction with e–learning with a mean 16.31 and a SD 3.23 with a low score. Totally, reality average of using e–learning in teaching agricultural sciences considering instructors' point of views reached 72.2 with a SD 8.4 with a medium score.

Secondly: what is reality of using the e–learning for teaching agricultural sciences according to the students' opinions considering the corona pandemic?

Table (3): results of the dimension of e–learning questionnaire according to the students' opinions.

Rank	Dimension	Sample	Number of phrases	Total score	mean	Standard deviation	Score
1	Obstacles to E–learning in teaching agricultural sciences.	90	7	21	14.23	4.12	**High**
2	Students' interaction with E–learning.	90	13	39	23.45	6.23	**Moderate**
3	Teachers' interaction	90	7	21	12.43	4.83	**Moderate**

	with E-learning considering the Corona crisis						
4	Continuity of E-learning considering the spread of Corona.	90	13	39	21.67	5.81	**Moderate**
	Total	90	40	120	71.78	10.34	**Moderate**

It's clear from table (3) that the field of E-learning Obstacles came at the first rank with an average 14.23 and a SD 4.12 with a high score. At the second rank came the field of students' interaction with e-learning with an average 23.45 and a SD 6.23 with a moderate score. while the field of teachers' interaction with e-learning came with an average 12.43 and a SD 4.83 in the third rank with a medium score. Finally, the field of E-learning continuity considering the spread of Corona came with an average 21.67 and a SD 5.81 with a medium score.

Totally, reality average of using e-learning in teaching agricultural sciences in from point of views students reached 71.78 with a SD 10.34 with a moderate score.

Thirdly: Are there differences between the opinions of teachers and students regarding the reality of using e-learning in teaching agricultural sciences?

The following figures shows the relationship between the total score of the reality of using e−learning in teaching agricultural sciences according to instructors' opinions and students considering the Corona pandemic and lateral dimensions.
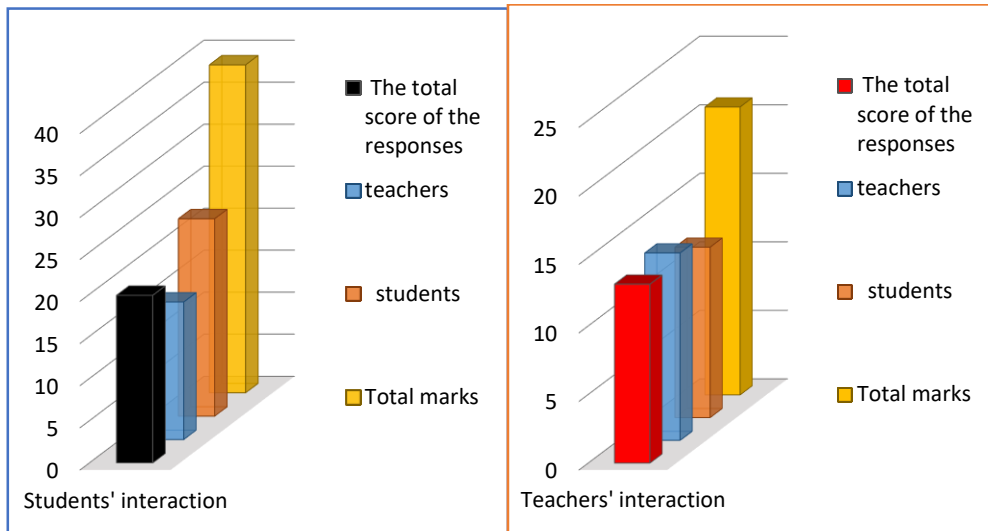

Figure (1) shows the students' interactions.   **Figure (2) shows the instructors' interaction.**

It is clear from Figure (1): that students' interactions with e−learning from their point of view are average, but from the instructors' point of view it is weak. Students' ratings for this dimension.
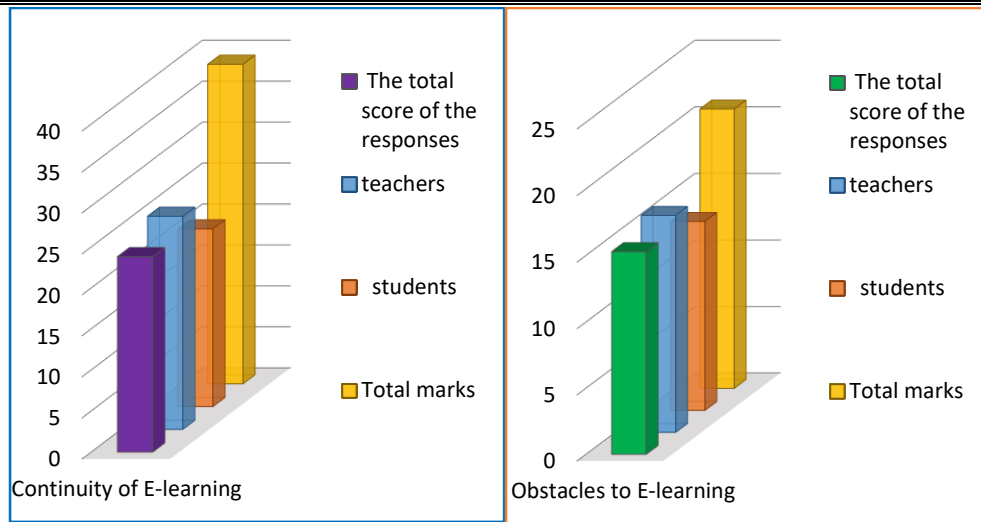
Figure (3) shows the continuity of e-learning.   **Figure (4) shows the obstacles to e-learning.**

It is obvious from Figure (3) that the estimates of e-learning continuity in teaching agricultural sciences from the instructors' opinions are higher than their students' point of view, and Figure (4) also shows the estimates of the difficulties of using e–learning in teaching agricultural sciences from the instructors' opinions were higher than the estimates of Students for this dimension as well.

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Figure (5): shows the total degree of the dimension compared to the response of the research sample to it.

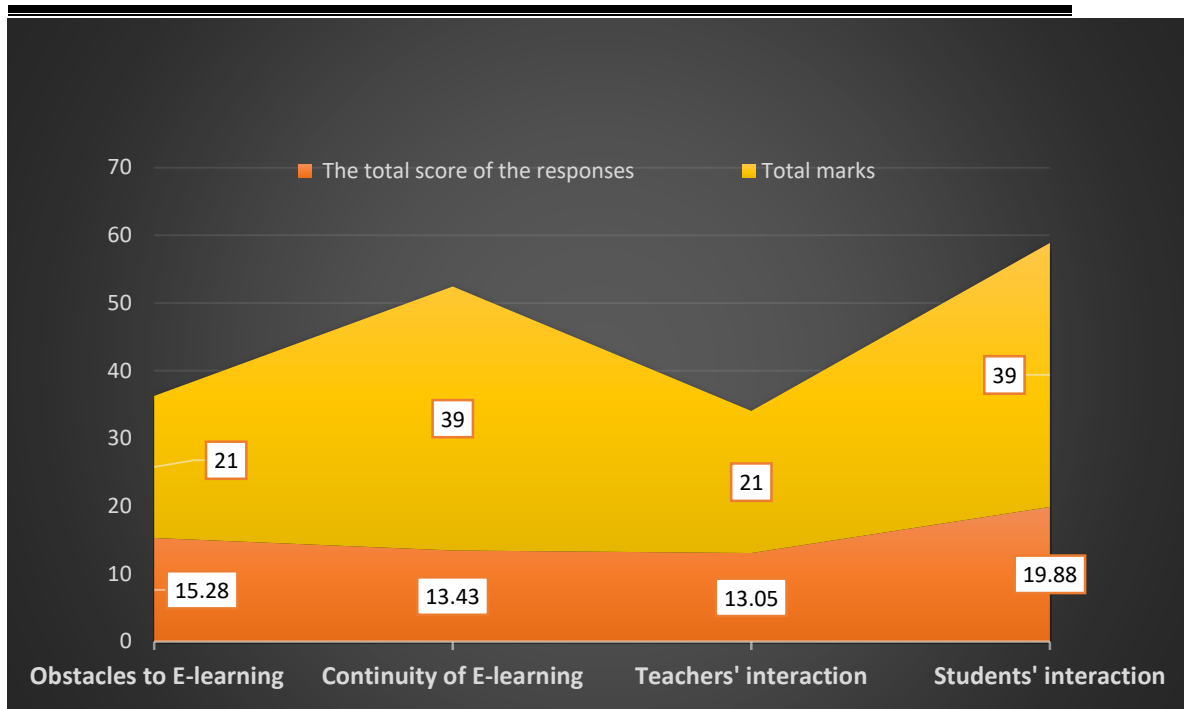It is obvious from Figure (5): that the total estimates of the participants for reality of utilizing e-learning in teaching agricultural sciences considering Corona pandemic in the four dimensions, came as follows: where it became clear that the dimension of the obstacles of using e-learning came in the rank with a percentage of 72.76, which indicates that There are challenges and obstacles according instructors' opinions and their students in utilizing e-learning to teach agricultural sciences. It came after teachers' interactions and acceptance of it in the second place with a percentage of 62.14%. And in the third place came after students' interactions with and acceptance of e-learning, and finally came after the reality of continuity of teaching

agricultural sciences using e-learning in the last rank with a percentage of 34.43%.
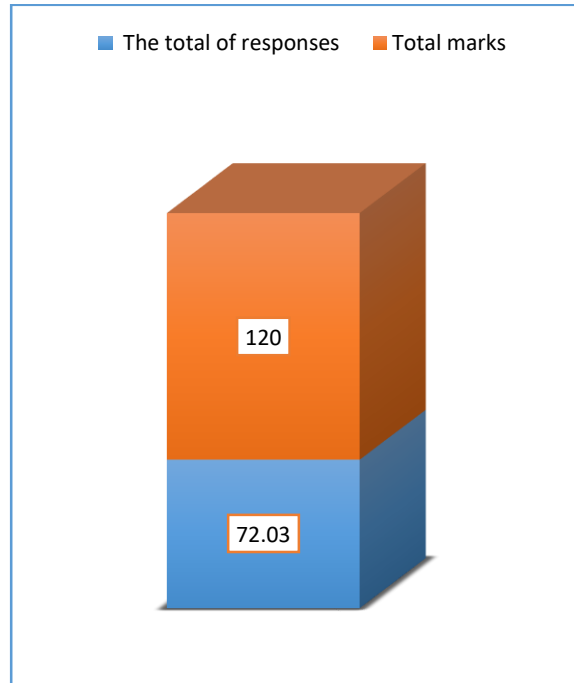
Figure (6) shows the whole score of theparticipants compared to the total score of the scale.

Figure (6) shows the overall responses of the participants about the reality of utilizing e-learning in teaching agricultural sciences considering the Corona pandemic compared with the total degree. As it became clear that the percentage of sample responses 60.02%. It is an average rate; this means that the reality of utilizing e-learning in teaching agricultural sciences according to instructors' opinions and their students is moderate.

Discussion:

The current study targeted to explore a reality of utilizing the e-learning for teaching agricultural sciences according to the instructors

and students' opinions considering the corona pandemic. The results of the research revealed that the estimates of the participants, which amounted to 150 participants, 60 instructors and 90 students, that the utilizing of e-learning in teaching agricultural sciences is medium, as the total percentage of the responses of the participants reached 60.02. Also, the dimension of the challenges of using e-learning was high, which means that students and teachers face difficulties from the ground up in using e-learning, regardless of its effectiveness or not.

The average estimates of the participants may be due to the reality of using e-learning in teaching agricultural sciences, and the rise in challenges to the following reasons:

- Agricultural education is one of the types of education that includes a large part of practical skills and depends on face-to-face learning. Teachers and students prefer education within laboratories, workshops and classes, they see it as the best in teaching and learning practical skills.

- The use of e-learning did not receive sufficient attention before the Corona pandemic in the education of agricultural sciences; Hence, the lack of necessary training for teachers and students to use it, the lack of available capabilities, the lack of continuous internet, and the inappropriate speed of the Internet in some areas, which created disparities in the reception and exchange of information, in addition to the occurrence of power outages in some villages during the Corona crisis. .

– The agricultural education sector had no plans to adopt e-education, and as a result for appearing the pandemic, which led to the search for an alternative, which prompted the directive officials to suddenly switch to using e-education at all educational levels, despite the lack of expertise in this field.

These results are consistent with the results of the study of **Draissi, Yong, (2020).** which appeared that the response to the outbreak of (COVID-19) and the conducting of distance education in Moroccan educational institution was facing some challenges and difficulties for both the instructor and the student (Draissi& Yong, 2020). As well as, it is consistent with **Muthuprasad, study et.al.** (2020). Which revealed that there are many challenges in using e-leaning in teaching agricultural sciences in India and recommended to use the hybrid learning (Muthuprasads, et al., 2021). **Study of Samson .et.al.** (2022). which revealed that the transition from traditional learning (face to face) urgently, made the institutions over the world confused, because there are no plans to conduct it properly. Especially at Chinees educational institutions (Samson, et al., 2022).

These results differ with the study of **Yulia, (2020).** which revealed that the Corona pandemic affected the reshaping of education in Indonesia, where the classical method of education refused to spread instead of learning through the Internet, because it boosts learning from home; thus, helps to minimize mixing of individuals with each other, and reduces the spread of the virus (Yulia, 2020). and a study of **Basilaia &Kvavadze (2020).** which indicated that the experience of

moving from school education to online education through the outbreak of epidemic in Georgia was effective, and the system and skills acquired by instructors, students and school management in the post–epidemic period can be benefited from in different cases such as people with special needs who need for additional hours, or by increasing the effectiveness of group teaching or increasing student independence and acquiring new skills (Basilaia, & Kaladze ,2020).

Recommendations:

– Using digital tools as part of the agricultural science teaching, not rely on them completely.

– Paying attention to the infrastructure of agricultural schools, regarding modern equipment and internet accessibility.

– Training The teachers and their students on the proper utilize of digital toolkits in the education process.

– Training The students on the proper utilize of digital toolkits in the education process.

Suggestions:

– Studying the effectiveness of a proposed training program based on the fourth industrial revolution applications to develop the skills of using e–learning in teaching among agricultural secondary education teachers.

– Studying the effectiveness of a proposed electronic program to develop digital learning skills for students of agricultural secondary education.

– Studying the effectiveness of using virtual laboratories in developing the attitudes of agricultural secondary education students towards e-learning.

– Studying the reality of the use of e-learning in the different educational stages from the point of view of teachers and students.

– Studying the effectiveness of an electronic course in the development of digital culture for students of agricultural secondary education.

– Studying the challenges faced by the use of e-learning in agricultural secondary schools and how to overcome them.

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Appendixes

Annex(1): a questionnaire's instructors for using e− learning in teaching the agricultural sciences.

Dear teacher: You have in your hands a questionnaire that aims to determine the degree of use of e−learning in teaching agricultural sciences and the difficulties that hinder its use in light of the Corona pandemic from your point of view.

This questionnaire is divided into four sections as following:

— faculty members' interaction with e−learning in light of the Corona pandemic.

— the level of students' interaction with e−learning.

— E−learning continuity.

— Obstacles to e−learning.

Therefore, please kindly answer this questionnaire according to your point of view. knowing that this questionnaire is for use only for the purpose of scientific research. Hence, you must read the statements of the questionnaire well, and then put a check mark in the box that expresses your own opinion, as there is no right or wrong answer. The correct answer is the one that expresses your point of view. knowing that all information will be strictly confidential and for scientific research purposes only.

So the following must be observed:

— Do not start answering before you are authorized.

— For each statement, there are three alternatives. You must choose only one of them that expresses your opinion (always − sometimes − rarely).

— Do not put more than one choice in front of one phrase.

— Do not leave any statement unanswered.

Thank you for your kind cooperation with us.

Respondents' data

☒ Name / Optional: ………………………………………

☒ Your Gender is:

☒ Major subject in agricultural education: …………………

☒ School name:

………………………………………………………………

☒ The name of the scientific

department:……………………………………………

☒ Governorate Name: …………………………………..

The questionnaire's instructors

N	The statements	Scale levels		
		Agree	Neutral	Disagree
	The first dimension: continuity in the e−learning process.			
1	You are continuously trained by the school in the use of e−learning to work with the Corona pandemic.			
2	The techniques you use in e−learning are effective and cover all aspects of the curriculum.			
3	It is gradually moving from traditional education to e−learning in light of the Corona crisis.			
4	You are satisfied with using the e−learning system as an alternative to the traditional education system in light of the Corona crisis.			
5	Having difficulty sending and receiving educational materials remotely without			
6	The school provides you with training courses that explain the mechanism of using the e−learning system during teaching in light of the Corona pandemic.			
7	You have sufficient skills to design and produce effective electronic content.			
8	You display the scientific material for your subject on the websites designed by the Ministry of Education in an easy and attractive way.			
9	The e−learning system provides you with good communication with your colleagues and students.			

10	The school provides you with the appropriate technical support to facilitate the use of technology in the educational material.			
11	E-learning effectively contributes to the continuity and success of the educational process in light of the Corona crisis.			
12	The Department of Education provides you with a guide for using the e-learning website.			
13	The school conducts a continuous evaluation of the e-learning process.			
The second dimension: the obstacles facing e-learning.				
1	The e-learning system is compatible with all educational materials.			
2	All teachers have sufficient and appropriate experience and skills to use computers and the Internet in e-learning.			
3	You face difficulties while using the Internet, where the Internet is cut off and the speed is poor.			
4	Convergence of training courses on the use of e-learning in teaching agricultural sciences.			
5	A power outage occurs while you are teaching remote students.			
6	You do not face any difficulties while communicating with students or with my fellow teachers in the e-learning system.			
7	Facing problems in preparing video lessons and electronically.			
8	Having difficulty keeping track of the large numbers of students through the available e-learning tools.			
9	The student faces problems and obstacles when studying the material electronically			
10	Students' interaction with e-learning is affected by difficult or special living conditions			
11	The technological infrastructure necessary for successful e-learning is in place.			
12	The educational administration provides all financial and moral support for the success of e-learning.			
13	The educational administration provides computer labs and the necessary equipment for e-learning and internet connectivity.			

N	The statements	Scale levels		
		Agree	**Neutral**	**Disagree**
	The third dimension: the interaction of faculty members with e-learning.			
1	It conducts tests remotely and evaluates students electronically			
2	You prefer e-learning because it makes you use more time than traditional education.			
3	You find high credibility in evaluating students through the e-learning system.			
4	The evaluation methods used in e-learning are appropriate and take place in a variety of ways.			
5	It continuously evaluates the student during the distance learning process.			
6	You raise the educational material for students easily and conveniently.			
7	Easily answer student inquiries remotely.			
	The fourth dimension: the level of students' interaction with e-learning			
1	The educational content includes exercises and assignments that help with e-learning			
2	Students are satisfied with the extent to which they benefit from e-learning.			
3	Agricultural education students interact with the e-learning system on an ongoing basis.			
4	The e-learning method helps in understanding the scientific material clearly and smoothly.			
5	Displaying the educational material electronically provides the student with additional skills.			
6	The student can ask any questions and inquiries through e-learning.			
7	The e-learning system allows the student to access the educational material at any time.			

Open-ended questions

A – **From your point of view as a teacher in agricultural secondary schools, what are your suggestions for the success of using e-learning in teaching agricultural subjects.**

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B – **From your point of view as a teacher in agricultural secondary schools, what are the challenges you face using e-learning in teaching agricultural**

subjects?..

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Annex(2): a questionnaire's learners for using e‑ learning in teaching the agricultural sciences.

Dear learner: You have in your hands a questionnaire that aims to determine the degree of use of e‑learning in teaching agricultural sciences and the difficulties that hinder its use in light of the Corona pandemic from your point of view.

This questionnaire is divided into four sections as following:

‑ faculty members' interaction with e‑learning in light of the Corona pandemic.

‑ the level of students' interaction with e‑learning.

‑ E‑learning continuity.

‑ Obstacles to e‑learning.

Therefore, please kindly answer this questionnaire according to your point of view. knowing that this questionnaire is for use only for the purpose of scientific research. Hence, you must read the statements of the questionnaire well, and then put a check mark in the box that expresses your own opinion, as there is no right or wrong answer. The correct answer is the one that expresses your point of view. knowing that all information will be strictly confidential and for scientific research purposes only.

So the following must be observed:

‑ Do not start answering before you are authorized.

‑ For each statement, there are three alternatives. You must choose only one of them that expresses your opinion (always ‑ sometimes ‑ rarely).

‑ Do not put more than one choice in front of one phrase.

‑ Do not leave any statement unanswered.

Thank you for your kind cooperation with us.

Respondents' data

☒ Name / Optional: ……………………………………………

Reality of Using the E-Learning for Teaching Agricultural Sciences According to the Instructors and Students' Opinions Considering the Corona Pandemic

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☒ Your Gender is:

☒ Major subject in agricultural education: …………………

☒ School name:

………………………………………………………………………

☒ The name of the scientific department……………………

☒ Governorate Name: ………………………………………….

The questionnaire's learners

N	The statements	Scale levels		
		Agree	Neutral	Disagree
The first dimension: continuity in the e-learning process.				
1	You are being trained by the school on distance learning during the Corona pandemic.			
2	The techniques that teachers use in e-learning are effective and cover all curricula.			
3	Teachers are gradually moving from traditional education to e-learning.			
4	You feel satisfied and happy when you learn through e-learning in light of the Corona crisis.			
5	You send your assignments, activities you do and receive educational materials done by the teacher without any difficulties.			
6	The school provides guidance and training courses that explain the mechanism of using the e-learning system for students during the Corona crisis.			
7	Teachers have sufficient skills to design and produce effective online content.			
8	The website design provided by the Ministry of Education for e-learning facilitates the presentation of the material in an attractive manner.			
9	The e-learning system provides you with students to communicate with teachers and ask them about any question.			
10	The school provides appropriate technical support to facilitate the use of e-learning in the educational material.			

11	E-learning technology effectively contributes to the continuity and success of the educational process in light of the Corona crisis.			
12	The Education Department provides a guide that you can use to guide you as you learn through educational websites.			
13	The e-learning system is continuously evaluated.			
	The second dimension: the obstacles facing e-learning.			
1	The e-learning system is compatible with all educational materials.			
2	You notice that teachers have skill, experience, and skill to use e-learning during your teaching.			
3	While you are learning online, the internet speed is appropriate, and the internet is not interrupted.			
4	The educational administration conducts many training courses to train student teachers on the use of e-learning in learning agricultural materials.			
5	A power outage occurs during electronic learning.			
6	Having difficulty communicating with teachers to exchange ideas and opinions.			
7	Having problems with distance learning.			
8	You have difficulty learning the large amount of study materials electronically.			
9	It directs you to problems and obstacles when studying the material electronically			
10	Difficult living conditions or your own circumstances influence your interaction with e-learning.			
11	Availability of the educational administration the technological infrastructure necessary for the success of e-learning.			
12	The educational administration provides financial and moral support for the success of e-learning.			
13	Availability of the educational administration, computer labs and the necessary equipment for e-learning and internet connectivity.			

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N	The statements	Scale levels		
		Agree	Neutral	Disagree
The third dimension: the interaction of faculty members with e-learning.				
1	Teachers hold many tests remotely.			
2	Teachers make better use of time in e-learning than in traditional education.			
3	Feel credible when you are evaluated through the e-learning system.			
4	E-learning teachers use many assessment methods that are appropriate for you and in a variety of ways.			
5	You are continuously evaluated during the distance learning process.			
6	The teacher accompanies the educational material with videos, pictures and learning resources that illustrate them.			
7	Teachers answer all questions and inquiries you ask them through distance education.			
	The fourth dimension: the level of students' interaction with e-learning			
1	The educational content provided in e-learning includes many exercises, assignments and activities that help you interact with them and learn well			
2	Are you satisfied with how much you have benefited from e-learning			
3	Continuously interact with the e-learning system			
4	The e-learning method helps you to understand the scientific material clearly and smoothly			
5	Viewing the scientific material electronically will provide you with additional skills			
6	You can ask any questions and inquiries through e-learning and communicate with teachers and your colleagues.			
7	The e-learning system allows you to access the educational material at anytime and anywhere.			

Open-ended questions

A – From your point of view as a learner in agricultural secondary schools, what are your suggestions for the success of using e-learning in teaching agricultural subjects……………………………………………………………
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B – From your point of view as a learner in agricultural secondary schools, what are the challenges you face using e-learning in teaching agricultural subjects?

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Annex (3): Names of the arbitrators for the study.

N	The names of the arbitrators	Position	University| school
1	Prof. Dr. / Abdel-Malik Abdel-Rahman Taha	Professor of Curricula and Methods of Teaching Science and Former Dean.,	Faculty of Education – Tanta University
2	Prof. Dr. /Mahmoud Abdel Aziz Taha	Professor of Curricula and Methods of Teaching Agricultural Sciences	Faculty of Education – Kafr El-Sheikh University
3	Prof. Dr. /Saad Mohammed Emam	professor of educational technology	Faculty of Education – Tanta University
4	Prof.Dr/ Soad Ahmed Shaheen	professor of educational technology	Faculty of Education – Tanta University
5	Dr. /Hamdi Ezz Al Arab	Assistant professor of educational technology	Faculty of Education – Tanta University
6	Dr. /Jamal Mahmoud Khairy	Assistant Professor of Curricula and Teaching Methods of Agricultural Sciences,	Faculty of Education, Minia University.
7	Dr. /Mohamed Fahim Hamed	A teacher of curricula and methods of teaching agricultural sciences,	Faculty of Education, Minia University.
8	Dr. /Olfat Eid Choucair	a full-time teacher of curricula and science teaching methods	Faculty of Education – Tanta University
9	Dr. /Samia Mohamed Moussa	a full-time teacher of curricula and science teaching methods	Faculty of Education – Tanta University