

**THE DEGREE OF EFFECTIVENESS OF E-LEARNING IN LIGHT OF THE
CORONA PANDEMIC FROM THE POINT OF VIEW OF SECONDARY SCHOOL
STUDENTS IN THE NORTHERN TRIANGLE AREA IN ISRAEL**

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Abstract:

This study aimed to identify the effectiveness of e-learning in light of the Corona pandemic from the point of view of secondary school students in the Northern Triangle area in Israel. The study adopted the descriptive analytical approach as it is more suitable for such type of studies, and the study population consists of all secondary school students in the Northern Triangle area in Israel, the study sample consisted of (210) students. The results showed that the degree of effectiveness of e-learning in light of the Corona pandemic in secondary schools in the Northern Triangle area in Israel came with a medium degree, the first of which was the interaction of teachers with e-learning in light of the Corona pandemic with an average (3.92) and a high degree, and then the continuity of e-learning in light of the Corona pandemic with an average arithmetic (3.57) and a medium degree, followed by the interaction of students with e-learning in light of the Corona pandemic with an average arithmetic (3.45) and a medium degree. The results also showed no statistically significant differences attributable to the effect of the gender variable across all areas and total degree. Statistically significant differences attributable to the impact of the specialization variable in all areas and the total degree, and the differences came in favor of the literary specialization. In light of the findings of the study, the researcher recommends a number of recommendations, the most prominent of which are:

- The need to provide an appropriate environment for the implementation of the e-learning strategy in secondary schools in the Northern Triangle area in the Israel.
- The need to invest in the positive attitudes of students towards the use of e-learning strategy, and work to develop appropriate plans and programs to benefit from these trends.
- The need to work on the integration of face-to-face and e-learning to take advantage of the advantages of e-learning.

Key Words: E-Learning, Corona, Secondary Schools, Triangle Area, Israel.

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Introduction:

The great developments in the field of information and communication technology, and the spread of electronic knowledge among students in schools have led to the emergence of many new forms in the educational system, and this technical change has led to a major knowledge revolution that has led to the disappearance of the boundaries of time and place, and the urgent need to move from regular education to modern learning.

Perhaps one of the reasons that led to the resort to the e-learning system and the generalization of its use in most educational institutions is what the traditional education system suffers from shortcomings as it relies heavily on memorization and indoctrination through the accumulation of information without updating, that is, it relies on educational curricula without renewal in content and keeping pace with its information from technical development in the field of information that is related to learning and teaching, this is clearly seen in the e-learning process, which depends on adapting to the educational process as it supports developments in society. Therefore, it has become important to develop educational systems in line with the new technology revolution, as modern educational systems seek to benefit from technological developments by integrating technology into the education process in order to provide a stimulating and attractive learning environment.

When the outbreak of the Corona epidemic began, no one imagined that the world before Corona would not return as it was, and that humanity is bidding farewell to an era, and receiving a new era with new modern concepts, targeting learning and not teaching, and the challenge before everyone, without exception, is focused on reducing the negative effects of this epidemic on learning and teaching, and benefiting from this experience to improve and develop learning.

From this standpoint, and in line with the epidemiological situation in light of the Corona pandemic and the resulting disruption of schools and universities, resorting to the use of electronic learning has become an urgent necessity in educational institutions, especially schools.

The first axis: the general framework of the study**Study problem**

The Corona pandemic has hit the whole world without exception, as it has led to the disruption of state institutions in various sectors, and all educational institutions have been suspended at all stages, and the Arab society in Israel was not isolated from that, as educational institutions stopped until appropriate ways were found to continue the education process in light of the outbreak of the Corona pandemic, so the suspension of traditional education, which made the focus largely on e-learning.

Many previous studies have recommended the use of e-learning and applications, such as the study of Al-Trakia (2022), the study of Al-Salman and Bawaneh (2021), the study of Abu Sara (2020), and the study Mailiraz, et. la, (2020), and from this point of view, this study came to reveal the degree of effectiveness of e-learning in light of the Corona pandemic from the point of view of secondary school students in the Northern Triangle area in the Israel.

Study Questions

- 1 -What is the degree of effectiveness of e-learning in light of the Corona pandemic from the point of view of secondary school students in the Northern Triangle area in Israel?
- 2- Are there statistically significant differences at the level of significance ($\alpha \leq 0.05$) between the average response of the study sample members on the degree of effectiveness of e-learning in secondary schools in the Northern Triangle area in Israel due to the difference in gender and specialization variables?

Objectives of the study

- 1 -Identifying the degree of effectiveness of e-learning in light of the Corona pandemic from the point of view of secondary school students in the Triangle area in Israel.
- 2- Identifying the differences in the responses of the study sample on the degree of effectiveness of e-learning in light of the Corona pandemic due to the variables (gender and specialization).

The importance of the study

The importance of this study lies in two aspects, a scientific (theoretical) and a practical (applied) aspect.

Theoretical importance: The importance of the study stems from the importance of its subject, as there is an importance to study the subject of the degree of effectiveness of e-learning, especially in light of the Corona pandemic, and its great impact on the nature of the educational process.

Applied importance

The importance of this study from the process is highlighted in the possibility of benefiting researchers in the field of education in general, and giving a vision to the authorities concerned with the development of blended learning in all schools in order to integrate e-learning and adopt it at all stages of education, and thus provide

recommendations that contribute to addressing the weaknesses revealed by the results of the study in order to overcome it in the future if the e-learning strategy continues to be used in the Northern Triangle area in Israel

Method and procedure

The methodology and procedures of the study are a major axis through which the applied side of the study was completed, and through it the data required to conduct statistical analysis was obtained to reach the results that were interpreted in the light of the literature of studies related to the subject of the study.

Study method

The study adopted the descriptive analytical approach to answer the questions of the study, due to its appropriateness, the nature of this study and its objectives.

Study population and sample

The study population consisted of all twelfth-grade students in secondary schools in the Northern Triangle area in Israel for the academic year 2021/2022, and a random sample of (210) male and female students was selected from the study population, and the following table shows this:

Table (1)

Distribution of study sample

Variables	Categories	Repetition	Percentage
Gender	Male	١٠٨	٥١.٤
	Female	١٠٢	٤٨.٦
Specializatio n	Literary	٩٩	٤٧.١
	Scientific	١١١	٥٢.٩
Total		٢١٠	١٠٠.٠

Study Tools

The study questionnaire was developed to collect data by reference to the theoretical literature and previous studies related to the study problem. The questionnaire included items measuring the degree of effectiveness of e-learning in light of the Corona pandemic

from the point of view of secondary school students in the Northern Triangle area in Israel, consisting of (20) items distributed over three areas:

The first field: the continuity of e-learning in light of the Corona pandemic (7) items.

The second field: the interaction of teachers with e-learning in light of the spread of the Corona pandemic (7) items.

The third field: students' interaction with e-learning in light of the spread of the Corona pandemic (6) items.

The questionnaire was distributed electronically to the members of the study sample, and it was responded to according to the Likert five-point scale.

Second axis: Theoretical Framework

The concept of e-learning

E-learning is considered the type of education that depends mainly on the use of electronic media in communication, skills acquisition, information reception, and interaction between teacher and student and between student and school, and this type of education does not require the presence of school buildings or classrooms, but rather eliminates the existence of virtual physical components by their means, and this type is associated with electronic means Al-Sakka, (2012).

Al-Khafaji (2015) defined distance e-learning as a method of education in which the learner receives information from a place far from the teacher using modern means of communication, computers, networks and educational software.

Al-Anezi et al. (2021) believe that e-learning seeks to provide educational content (electronic) through computer-based media and networks to the learner in a way that allows him to actively interact with this content and with the teacher and his peers, whether simultaneously or asynchronously, as well as the possibility of completing this learning also through these electronic media.

The researcher believes that e-learning is an organized process aimed at achieving educational outcomes using technological means that provide sound, image, films and interaction between the learner and educational activities at the appropriate time and time for him.

Types of e-learning and its elements

Al-Rababa's study (2021) indicated that the types of distance e-learning are limited according to the time of its occurrence to two types:

Synchronous e-learning: Face-to-face learning that requires learners to be present at the same time in front of computers to conduct discussion and conversation between the learners themselves and between them and the teacher through chat rooms or by receiving

lessons through virtual classrooms or using other tools. One of the advantages of this type of education is that the learner receives immediate feedback from the teacher, in addition to the low cost, and not going to school, and one of the negatives facing users is the need for modern devices and a good communication network, and synchronous e-learning is one of the most advanced and complex types of e-learning, where science and the learner meet online at the same time (simultaneously).

Asynchronous e-learning: Indirect education that does not require the presence of learners at the same time, such as obtaining experiences through available websites or CDs or through e-learning tools such as e-mail or mailing lists. One of the advantages of this type is that the learner gets the study according to the times convenient for him, and with the effort he wishes to provide, as well as the learner can re-study the material and refer to it electronically whenever he needs to, and one of its disadvantages is that the learner cannot get immediate feedback from the teacher.

Mustafa (2017) pointed out that distance e-learning consists of three elements:

Inputs: learner, teacher, administration, technologies, electronic programs and educational materials.

Processes: The series of interactions between inputs in order to achieve the objectives of distance e-learning.

Outcomes: Learner growth in all cognitive, emotional, psychological and motor aspects.

E-Learning Objectives

The objectives of e-learning are numerous, as they can be summarized according to Abdel Hakim (2020) with the following points:

- Providing multiple and disparate sources of information that provide opportunities for comparison, discussion, analysis and evaluation.
- Re-engineering the educational process by determining the role of the teacher, the learner and the educational institution.
- The use of e-learning media in linking and interacting with the educational system (teacher, learner, educational institution, home, community).
- Exchange of educational experiences through e-learning media.
- Developing the skills and abilities of students and building their personalities to prepare a generation capable of communicating with others and interacting with changes through modern technological means.
- Spreading technological culture in a way that helps create an electronic society capable of keeping pace with the developments of the times.

-Raising the awareness of the educational system (teacher, learner, educational institution, home, community), of the importance, how and effectiveness of e-learning, to create interaction between this system.

Characteristics of e-learning

Education provides a number of characteristics that enhance the educational process, according to Hanini (2021) in the following characteristics:

Interactivity: An important principle where it puts the learner in an interactive environment that gives him the opportunity to deal with some real-world experiences and events, and it also provides the means that link the learner with other learners or between him and the teacher, and interactive is the most effective method of self-learning, and this is what computer-based e-learning seeks to achieve, because the more senses used in teaching and learning, the more useful it is for the teaching and learning process.

Learning-centered: because the use of e-learning tools contributes to a deeper focus on the needs of learners and learner patterns in order to develop educational courses instead of focusing on the teacher's abilities.

Integration: In the era of massive digital information technology, the traditional tools that teachers used to use in the classroom have become completely different in their form and capabilities, as they have shifted from the macro world to the micro world, and the integration and integration of most of them has led to a decrease in time and space distances between borders to a degree that did not exist before.

Supporting and enhancing the motivations of continuous learning: E-learning works to develop the learner's abilities and desire to continue learning, the initiative to obtain self-learning and the search for ways to develop this initiative is one of the most important skills and features of the era of digital information technology, repetition and practice are among the most important characteristics on which e-learning depends.

Flexibility and convenience: E-learning is flexible because it allows the learner to review his lessons according to his circumstances and time at any time and wherever he is, and it also provides a suitable environment for both the teacher and the learner alike, the teacher can focus on important ideas during the lesson, and students who have difficulty concentrating find an appropriate organization of information that is easy to absorb and perceive.

Modernity and procedural: Continuous change is an essential feature of the digital age, and because e-learning is one of the tools of the digital age, the principle of modernity and procedural will be one of the most important characteristics that govern the context of the e-learning process, so that each learner is able to obtain the latest and most relevant information to the subject he is studying or learning, and this increases the credibility and reliability of e-learning, which leads to its activation and making it more procedural.

E-learning in light of the Corona pandemic

The Corona crisis has cast a shadow on teaching and learning, so educational institutions are in a state of emergency and search for ways of communication that enable them to achieve goals, and achieve communication between the pillars of the educational process. Distance learning was the appropriate method, and may be the only one to complete education, so the learning environment turned into a full-fledged virtual environment. This has led teachers and learners to work in very different conditions from those they were previously familiar with (Client, 2020). As a result, educational methods and models emerged during the Corona pandemic to meet these challenges at the global level, perhaps the most prominent of which is the e-learning method, which is one of the positive means that help the learner to interact continuously, by providing an interactive environment that allows the student to study at the time and place he prefers and conduct interviews and discussions on the Internet, Providing up-to-date information, simulation programs, interactive events and practical applications that are consistent with the needs of students, which contributes to increasing the learner's self-confidence, which is the focus of the educational process Kenawy (2020). Educational institutions are no longer the only educational environment for providing education services, which has called on educators to constantly search for the best ways and means to provide an interactive learning environment to attract the interest of learners and urge them to exchange views and inks. E-learning is one of the learning methods that make learners the center of the learning process, where learners cooperate to obtain information, exchange it and put forward ideas to solve problems without committing to a specific place or time to receive the learning process Abed El-Kader (2021).

Distance e-learning as an educational system has gained wide popularity and has been adopted globally, and therefore its practice varied according to different cultural contexts, and according to the quality of its application, but quality is a major factor in organizing the services provided by any institution, and with the expansion of the application of distance education, the need to ensure that the programs provided through distance education meet the minimum quality standards has become more important than by Sintema (2020).

E-learning contributes to the development of thought and enriches the learning process, and also allows students to continue to access curricula and educational auctions,

as this feature makes the learner in a stable state, as he can obtain the information he wants at a time that suits him, as e-learning supports the principle of self-learning and lifelong learning Al-Otaibi (2020).

Third axis: Study Results and Discussion

To answer the first question, which states: "**What is the degree of effectiveness of e-learning in light of the Corona pandemic from the point of view of secondary school students in the Triangle area in Israel?**"

Table (2) Arithmetic averages and standard deviations of the study sample's estimates of the effectiveness of e-learning in light of the Corona pandemic in descending order

Number	Item	Arithmetic	Standard Deviation	Rank	Degree
2	Teachers' interaction with e-learning in light of the Corona pandemic	3.92	0.56	1	High
1	Continuity of e-learning in light of the Corona pandemic	3.57	0.66	2	Medium
3	Students' interaction with e-learning in light of the Corona pandemic	3.45	0.78	3	Medium
The effectiveness of e-learning		3.66	1.04		Medium

Table (2) shows that the arithmetic averages of the effectiveness of e-learning in light of the Corona pandemic ranged between (3.45-3.92), where teachers' interaction with e-learning in light of the Corona pandemic came in first place with the highest arithmetic average (3.92) and a level of evaluation (high), while the continuity of e-learning in light of the Corona pandemic came in second place with an arithmetic average of (3.57), and with an evaluation score (medium), and students' interaction with e-learning in light of the Corona pandemic came in last place. With an arithmetic average (3.45) and a rating score (medium).

The researcher explains that e-learning was not in the plans of educational institutions before the Corona pandemic, as they suddenly shifted towards e-learning, which reduces their experience in this field, and makes this type of education need to improve its level, and this can also be attributed to the fact that the transition to the e-learning system may affect the interaction of students as they have not received prior training on the use of the e-learning system, unlike teachers who, by virtue of their great experience, are more

interactive with the e-learning system. E-learning. This finding is consistent with part of the results of the Al-Zubon Study (2020) and the Al-Tarakia Study (2022).

Teachers' interaction with e-learning in light of the Corona pandemic:

Table (3) Arithmetic averages and standard deviations of the estimates of the study sample members for teachers' interaction with e-learning in light of the Corona pandemic in descending order

No,	Item	Arithmet ic Average	Standar d Deviati on	Ran k	Degre e
١٠	Relieves the teacher's burdens as it transforms the study process into a process of dialogue between the teacher and the learner instead of the traditional explanation	4,13	0.65	1	High
١٢	He has the smoothness in the transition from traditional education to e-learning in light of the Corona pandemic	4,02	0.71	2	High
١١	Feels satisfied with the use of the e-learning system as an alternative to the face-to-face education system in light of the Corona crisis	4,01	0.70	3	High
8	Focuses on teaching students and reducing the effort the teacher puts into with the increasing numbers in the classroom	3.99	0,68	4	High
9	The school provides e-training courses that explain the use of the e-learning system for teachers during the Corona pandemic	3,98	0,85	5	High
14	Teachers have sufficient skills to design and produce effective electronic content	3,68	0,74	6	Mediu m
13	The design of the website provided by the school for e-learning facilitates the presentation of the material in an interesting way	3,64	0,73	7	Mediu m
Total Degree		3,92	0.73		High

Table (3) shows that the arithmetic averages in this area ranged between (3.64-4.13), with a (high) evaluation level of the grade on all paragraphs, except for item (14) and item (13), which received an average evaluation score, while the field as a whole obtained an arithmetic average (3.92), with a high evaluation score. Item (10) came in first place, which states: "reduces the teacher's burdens by transforming the study process into a process of dialogue between the teacher and the learner instead of the traditional explanation" with an arithmetic average of (4.13), and with a high evaluation score, item (13) came in last place, which states: "the design of the website provided by the school for e-learning facilitates the presentation of the material in an interesting way" with an arithmetic average of (3.64) and an average evaluation score. This result is due to the increasing importance of the teacher in e-learning and the difference in his role, it is necessary to become a master of modern electronic skills to become a guide, motivator, supervisor and trainer for his students, not to mention his role in evaluation and feedback, follow-up of the level of students, and preparing the appropriate e-learning environment. Therefore, the interaction of teachers with e-learning was through continuous training to achieve integration between technology and specialization, so the interaction of teachers with e-learning came at a high level. This finding is consistent with that of Tarakia study (2022) and Rababah study (2012).

Continuity of e-learning in light of the Corona pandemic

Table (4) Arithmetic averages and standard deviations of the estimates of the study sample for the continuity of e-learning in light of the Corona pandemic in descending order

No,	Item	Arithmet ic Average	Standar d Deviati on	Ran k	Degre e
6	The best use of the usual teaching methods and methods on e-learning	3.67	0.79	1	Mediu m
3	I don't trust e-learning in terms of the honesty of evaluating my performance and educational level	3.63	0.88	2	Mediu m
١	I prefer e-learning to become the usual mode of learning	3.60	0.83	3	Mediu m
٢	E-learning increased my motivation towards learning	3.56	0,68	4	Mediu m
٤	E-learning encouraged me to self-education	3.54	0,78	5	Mediu

					m
o	E-learning lessons save me more time and effort	3.51	0,75	6	Medium
v	I think that e-learning gives me more self-confidence	3.50	0,71	7	Medium
Total Degree		3.57	0.82		Medium

Table (4) shows that the arithmetic averages in this area ranged between (3.50-3.67), with an evaluation level (average) of the grade on all paragraphs, while the field as a whole obtained an arithmetic average of (3.57), with an average evaluation score. Item (6) came first, which states: "The best use of the usual means and methods of education over e-learning" With an arithmetic average of (3.67), with an average evaluation score, item (7) came in last place, which states: "I think that e-learning gives me more self-confidence" with an arithmetic average of (3.50) and an average evaluation score. This result is also due to the fact that the e-learning strategy is considered an educational novelty imposed by the Corona pandemic, and every educational newcomer faces many difficulties at the beginning, then comes the experience to remove all obstacles to its continuity and adapt e-learning in a way that suits the conditions of the learning environment. This finding is consistent with the results of Al-Zubon Study (2020) and the Mialiraz Study (2020).

The interaction of students with e-learning in light of the Corona pandemic**Table (5) Arithmetic averages and standard deviations of the study sample's estimates of students' interaction with e-learning in light of the Corona pandemic in descending order**

No,	Item	Arithmet ic Average	Standar d Deviati on	Ran k	Degre e
17	Students interact with the e-learning system continuously	3.66	0.74	1	Mediu m
20	Feels satisfied with the extent to which students benefit from e-learning	3.62	0.90	2	Mediu m
15	Enables students to communicate with the teacher anywhere and anytime through e-mail and smart applications	3.54	0.83	3	Mediu m
18	E-learning allows the student to access the educational material at any time	3.50	0,84	4	Mediu m
16	Develops critical and creative thinking	3.42	0,83	5	Mediu m
19	The student can ask any questions and inquiries through distance learning	2.97	0,71	6	Mediu m
Total Degree		3.45	0.80		Mediu m

Table (5) shows that the arithmetic averages in this area ranged between (2.97-3.66), with an evaluation level (average) of the grade score on all items, while the field as a whole obtained an arithmetic average of (3.45), with an average evaluation score. Item (17) came in first place, which states: "students interact with the e-learning system continuously" with an arithmetic average of (3.66), With an average evaluation score, paragraph No. (19) came in last place, which states: "The student can ask any questions and inquiries through distance learning" with an arithmetic average of (2.97) and an average evaluation score. This result is logical and natural, as the Ministry of Education has started applying e-learning remotely in emergency circumstances, which is the Corona pandemic, and this means that students are not psychologically and skillfully prepared for the sudden and complete shift in receiving their education at home and for all subjects. They do not have sufficient skills in using distance learning platforms, and many of them may have their first experience in

learning using technology. This finding is consistent with that of Abu Sarah (2020) and Al-Salman and Discussing the results of the second question, which states: "**Are there statistically significant differences at the level of significance ($\alpha \leq 0.05$) between the average response of the study sample members on the degree of effectiveness of e-learning in secondary schools in the Northern Triangle area in Israel due to the difference in gender and specialization variables?**"

Regarding the variable of gender

The results of this question showed that there were no statistically significant differences due to the effect of the gender variable in all fields and in the total score.

Regarding the variable of specialization

The results of this question showed that there were statistically significant differences due to the effect of the specialization variable in all fields and in the total degree, and the differences came in favor of the literary specialization. The researcher explains this result that students with literary specialization see that e-learning is effective because the nature of their materials depends on memorization, while students of scientific specialization, due to the nature of their subjects that need to be taught face-to-face, find that e-learning is not commensurate with the nature of their materials.

Recommendations

- The school administration must work permanently and renewed on the development and development of structures, systems, and methods of work, in a way that secures participation and participation, stimulates creativity, and encourages research and experimentation, initiative and innovation.
- The need to develop educational curricula, and include in them what calls for the development of creativity to play its role in developing creativity in schools at the level of teachers and learners.
- The need to encourage teachers to master teaching strategies and learning methods that develop and develop creativity skills.
- Training teachers to use strategies that develop innovation such as: problem solving, discovery, games, brainstorming, inquiry, and uniqueness in education.

References:

- Abed El-Hakeem, S. (2020). E-Learning as a Prerequisite of the 21 st. Century Skills and Training of Mathematics Teachers. *Educational Sciences*, 4 (2), 131-153.
- Abed El-Kader, H. (2021). COVID 19 Crisis and Distance Learning Issues: Challenges and Requirements. *Educational Journal*, 1 (83), 1-17.
- Abu Sara, A. (2020). Employing Digital Technology in Education in Times of Crisis: Coronavirus as a Model. www.new-edu.com/auther/abusarabed.
- Anzi, T., et. al. (2021). Challenges of the E-Learning Management System in Public Education in the State of Kuwait in Light of the Corona Virus Crisis and its Aftermath. *Journal of Studies and Educational Researches*, 1 (3), 211-26.
- Khafaji, Sami (2015). *Open and Distance Education are the Basis of E-Learning*. Amman, Jordan.
- Al-Otaibi, K. (2020). Self-directed Learning as an Entry Point to Education in Light of the COVID-19 Crisis: A Proposed Conception. *International Journal of Research in Educational Sciences*, 3 (4), 257-388.
- Mialiraz, A., et. al. (2020). Secondary School Mathematics Teachers` Views on El-Learning Implementation Barriers during the COVID 19 Pandemic. *Journal of Mathematics, Science and Technology Education*, (16) 1, 1-9.
- Rababah, J. (2021). E-Learning Challenges in the Light of Corona Pandemic: Perspectives of Physical Education Teachers in the Governorate of Karak. *Journal of education*, Al-Azhar University, 190 (5), 398-411.
- Qanawi, S. (2020). Corona Pandemic and Distance Education: Features of the Crisis and its Effects Between Reality and the Future, Challenges and Opportunities. *International Journal of Research in Educational Sciences*, 3 (4), 225-260.
- Al-Saka, Z. (2012). *The Role of E-Learning in Increasing the Efficiency and Effectiveness of Computerized Education*. Iraq, Mosul, University.
- Al-Salman, S. and Bawa'ana, A. (2021). Attitudes and Challenges of Primary and Secondary Education Students Towards Distance Learning in ILght of the Corona Pandemic. *International Journal of Educational and Psychological Studies*, 9(1), 209-223.
- Sentima, E. (2020). Effect of COVID 19 on the Performance of Grade 12 Students Implications for STEM Education. *Journal of Mathematics, Science and Technology Education*, 16 (7), 1-6.
- Al-Tarakia, H. (2022). Evaluating the Reality of E-Learning During the Corona Pandemic from the Point of View of Teachers. *Journal of Educational and Psychology Sciences*, 30 (1), 490-510.

Al-Zubon, K. (2020). The Effectiveness of Distance Learning Compared to Direct Education in the Achievement of Students of the First Secondary Grade in the Subject of Arabic Language in Jordan. *Scientific Journal of Quality Education*, 4 (13), 201-220.