

Teachers' Perspectives of the Sudden Shift Towards Online Learning: Challenges and Future Lessons

Sereen Mousa Jubran

Al Balqa Applied University, Amman, Jordan

Muna Qteifan Al Fayez

Al Balqa Applied University, Amman, Jordan

Jawhara Darwish Abueita

Al Balqa Applied University, Amman, Jordan

Abstract—Traditionally, teaching math using English as a foreign language creates many challenges because learners may not have yet acquired the skills they need to understand the lesson. The study aimed to identify the challenges faced by teachers of math in English when course instruction shifted to online because of the COVID-19 pandemic. Also, the study presents three essential lessons from this experience from the teachers' perspectives. During the COVID-19 outbreak, all schools abruptly switched to Online Education. Most participants in the study had never done online teaching before the pandemic and were unfamiliar with using technology. The researchers used a mixed methods approach, incorporating the following two ways of gathering data: a questionnaire and face-to-face semi-structured interviews. The questionnaire consisted of two parts: (1) English language challenges and (2) access to technology. The questionnaire was administered to a sample of 50 female teachers, followed by structured interviews. The interview consisted of one question about the most important lessons learned, and the data were analysed using SPSS Statistics. The findings indicated that the English language and a lack of technology constituted obstacles for teachers. According to the participants, they identified three future lessons. The researchers provide recommendations to teachers, students, and governments.

Index Terms—future lessons, international programs, mathematics in English online learning, private schools

I. INTRODUCTION

Today's math teachers encounter many challenges when teaching math to students who use English as their second language. Learning can be complex for students as well. Some educators claim that math is an international language because it is numerical and deals with symbols, so teaching the subject does not require using any other languages. Other educators claim that language—for example, English—plays an essential role in teaching mathematics because language helps learners reflect, communicate, and deepen their understanding while learning how to solve math problems. Blankman (2019) and Haynes (2020) claimed that teaching math is not only about teaching the concepts of the subject; it is also about students understanding how to solve math problems while also being able to express their comprehension of them, either in writing or orally. In Jordan, there are two types of schools: government and private. In government schools, math is taught in both Arabic and English, whereas in private schools, math is taught only in English. Recently, the number of schools teaching math in English has increased in Jordan. According to the Ministry of Education, there are now 50 private schools teaching math in English, and teachers claim that they face many challenges in teaching math in English in a regular classroom environment.

However, in 2020, with the World Health Organization declared COVID-19 a global pandemic, people felt the consequences in many aspects of their lives, including Education. Across the globe, schools and universities were closed to avoid the transmission of COVID-19, leaving 1.7 billion students to stay at home (Abuhammad, 2020; Favale et al., 2020; Wenham et al., 2020). Some countries prepared for online learning, so they turned directly to it and continued educating their nation's students; however, other countries struggled to use online learning. Education in Jordan forced into online learning. Because most schools lacked the necessary equipment and used whiteboards in their classrooms, they were unprepared for online learning.

To avoid spreading the virus and reduce the number of infections in Jordan, the government decided to impose a lockdown policy and close all schools and universities to all students. This action by the government had tremendously catastrophic effects on schools, teachers, and students. Consequently, along with the previous challenges they faced, instructors who teach math in English to non-native speakers of the language had even more obstacles to overcome.

In this research, the researchers focused on the dichotomy of challenges facing math teachers in Jordan. The first is the pre-pandemic challenge of using the English language to teach math to non-native speakers of the language. The second relates to using technology in teaching math in English during the COVID-19 pandemic and the subsequent lockdowns. Finally, from teachers' perspectives, they introduce three significant lessons to consider in case of a new future pandemic.

II. LITERATURE

A. English Language Challenges

The difficulties associated with teaching and learning mathematics have long been attributed to the subject's cognitive demands, even if taught in the student's mother tongue. In English as a second language (ESL) lessons, mathematical terminology is rarely employed, and students struggle to learn math concepts and English language skills simultaneously. The mental needs of studying math and mastering English are separated when using the English language to teach math. In other words, teaching students how to solve mathematical problems in English involves understanding mathematical concepts and the English language, which can be challenging for students. Mathematical language in English as a second language (ESL) classrooms is rarely employed, so students struggle to acquire math principles and English language skills simultaneously.

As mentioned previously, some scholars believe that students learning a second language, such as English, will not suffer from understanding math even if it is taught in English because, they say, math is only a language of numbers itself. However, academic researchers investigating the impact of the English language on mathematics have found that mathematics and language intertwine in teaching and learning, even the subject's basic principles (Molina, 2012).

Still, the English language barrier is a fundamental part of the problem for many teachers who teach math in English to students who are studying ESL. (We should note that teaching math in the student's native language also poses problems for many students.) Nevertheless, some educators and math teachers still assume that math is language free because it depends only on numbers and symbols (Garrison & Mora, 2005; Janzen, 2008). This incorrect assumption is in line with Schleppegrella (2007), who believes that teaching math in English greatly depends on English oral communication, which in turn causes difficulties for students with low levels of English competency. He added that every symbol in math represents several relationships or words.

Similarly, according to Jourdain and Sharma (2016), the relationship between language and mathematics is now well acknowledged. They added that language features, such as the vocabulary of mathematical academic writing, syntax, and reading, are fundamental challenges that make mathematical writing difficult. Based on that, language is essential to teaching math because the latter depends highly on language communication using symbols. Moreover, Blankman (2019) added that one of the challenges in teaching math is the misinterpretation of vocabulary because some words refer to mathematical terms that have a different meaning in everyday usages, such as the word 'left', for example. According to Blankman, another stumbling block is a lack of understanding of English syntax and grammar. For instance, teachers should write math questions clearly because it will be challenging for students to understand linguistic problems. For better achievement, according to Boero et al. (2008), students should have a satisfactory level when using the natural language of mathematical activities.

Along the same line, McGregor (2007) and Raiker (2002) asserted that students tend to use reading skills, such as scanning and skimming when reading mathematical word problems in much the same way they read prose. However, the information is repeatable, whereas the data is dense and hidden between the lines in mathematical word problems. As a result, being unable to read and comprehend the written math problem hinders solving it.

B. Online Learning Challenges

In 2020, the COVID-19 pandemic quickly spread worldwide, leaving nearly every country to implement some lockdown policy to help slow down the rapid spread of this highly contagious disease. In Jordan, for example, the government put the whole kingdom under temporary lockdown for three months. Universities and schools in Jordan were the most affected by this lockdown because the government forced schools and universities to transition to online learning (also called e-learning), with the teachers teaching from their homes and the students learning from theirs. According to Jackson et al. (2016), the closure of schools affected approximately 1.7 billion students worldwide. The decision to lock down the country and force schools into e-learning caused chaos for teachers and students. Although this was the only way to maintain the continuity of the teaching process, e-learning was not easy for either teachers or students. This shift in the teaching process created many obstacles for schools, universities, teachers, and students.

Over the years, many researchers and educators have found several barriers to e-learning before and after the pandemic. Before the pandemic, most researchers classified these barriers into three categories: (1) school barriers, (2) teacher barriers, and (3) student barriers. School barriers included structural and organisational considerations (Assareh & Bidokht, 2011). Teacher barriers included limited access to technology, inadequate e-learning skills and experience, and lack of time to prepare a lesson using technology and assessment (Scrimshaw, 2004; Balanskat et al., 2006; Barter, 2008; Bingimlas, 2009; Irvin et al., 2010; Hadija & Shalawati, 2017; Quadri et al., 2017). Likewise, barriers related to students are a lack of experience in e-learning, computer proficiency, and no or slow internet connections (Song et al., 2004; Quadri et al., 2017).

Indeed, with the pandemic leading to lockdowns and school closings, the results were catastrophic for all: schools, teachers, and students. No schools could devise a suitable solution to following the pandemic guidelines except for e-learning, which forced teachers to convert their traditional ways of teaching into online learning. Much research has examined the technological barriers that most teachers face because of the sudden shift. Researchers have found that some obstacles were communication (Özüdoğru & Simsek, 2021), assessment (Guangul et al., 2020), and online experience. And training (Gautam, 2020; Zaharah & Kirilova, 2020; Cassibba et al., 2021), technology use tools (Zaharah & Kirilova, 2020), attitudes toward online learning (Hermato, 2020; Afroz et al., 2021), motivation (Chiu et al. 2020; Ryan & Deci, 2000), and course design.

III. METHODOLOGY

A. Research Purposes and Questions

This study investigates the impact of a sudden shift toward online learning on teaching math in English to non-native students. In addition, the study offers some future lessons from this experience from the teachers' perspective.

The researchers intended to find answers to the following questions:

1. What English language challenges do teachers face while teaching mathematics in English?
2. What online challenges do teachers face while teaching mathematics in English?
3. What are the lessons to be learned from this experience from the perspectives of teachers?

B. The Study Design

The researchers used both quantitative and qualitative approaches so our results would have a high level of validity, strengthening the basis for confirming the research findings. To maximise participants' opportunity to provide insights in various ways, the researchers deemed a sequential mixed methods approach most suitable and practical for collecting data on lessons learned after the pandemic. This hybrid method was applied sequentially in two steps. The first one was a two-part questionnaire, and the second step was the interview. The two methods were combined and completed each other because the results from the interviews added information to supplement the answers from the questionnaires.

C. Significance of the Study

The results of this study will benefit most societies, particularly Development Countries societies. Converting to e-learning during the pandemic was randomly tackled and remained so even after. Most researchers investigated the shift to online learning during the pandemic, and most of their results were a vote for this shift. Few or even no studies in the Middle East did not investigate the future lessons from this shift. Many researchers still have not examined this part, and no researchers interviewed teachers confidentially to shed light on the weakness of most governments' performance in online settings, at least in Development Countries. Most participants feared that criticism of the whole process would cause them problems. The critical role of mathematics and the English language currently plays a vital role in science and technology. Increased demand for graduates with English backgrounds in mathematics justifies the requirements for more transformative instructional strategies. Thus, schools that adopted English as an instructional teaching language can benefit from the study's findings and better prepare students. Administrators will receive guidance on what areas of dereliction to highlight by governments, school administrations, and instructors to boost students' performance in mathematics in English. The management systems at the Ministry of Education and school administrators view online learning as a supplementary concern. In addition, the decision-makers are unaware of the eLearning concept, and it lacks broad visions. Consequently, lacking human experience and material capacities led to this outcome.

D. Sample and Data Collection

The study sample included 50 female teachers teaching math in English for the 4th, 5th, and 6th grades in one of the private schools in Jordan's capital, Amman.

The instrument for data collection was a questionnaire divided into two parts. The first part related to the challenges of teaching math in the English language, whereas the second part related to teaching online. The choice of answers given on a Likert scale ranged from "always" to "never". Two university professors evaluated the validity of the questionnaire and decided to retain 20 items unchanged and delete five. The final questionnaire had twenty things to keep the questionnaire short and to ensure a high response rate. The researchers conducted a pilot study to verify the questionnaire's test-retest reliability. Twenty teachers were selected to take part in the pilot study and completed the questionnaire before. This group had characteristics like those of the whole sample of the study. The researchers used Cronbach's α to test the reliability of the questionnaire and confirmed that it had an acceptable level of reliability shown in Table 1.

TABLE 1
THE RELIABILITY COEFFICIENT

No	Domains	Cronbach's α
1	Online barriers	.86
2	English language barriers	.84
3	All items	.91

The second instrument in collecting the data, the researchers conducted six structured face-to-face interviews with the participants: two sixth-grade teachers, two fifth-grade teachers, and two fourth-grade teachers. The participants were interviewed and recorded on a tape recorder to provide the interview in unbiased and authentic recitation form (Sullivan, 2010). Participants were selected according to their willingness and availability to participate in the discussions. Moreover, they had the choice of using English or Arabic during the interviews and enough time to express their opinions freely about the lessons they thought must be learned after the pandemic. The interview consisted of two questions, yet the jury suggested having one comprehensive question rather than two during validation. Every participant added detailed information because they had plenty of interview time and added detailed information. The interviews were transcribed verbatim into written texts to help with data analysis (Sullivan, 2010). After transcribing the interviews, the researchers organised the findings into three categories of future lessons based on most participants' points of view.

IV. ANALYSIS AND RESULTS

Data analysis provides a descriptive statistical analysis predicated on the study's problems and questions. It included the mean scores, standard deviation, and ranking of the questionnaire items. Data analysis revealed that many educators struggle to communicate effectively in English while instructing their math classes. However, the findings illuminate the technical hurdles to overcome. Data analysis provides a descriptive statistical analysis predicated on the study's problems and questions. It included the average score, standard deviation, and ranking of the questionnaire items. The data showed that before the pandemic, one of the challenges they faced was communicating mathematical concepts in English. However, the findings illuminate the technological competencies as additional challenges to the already existing difficulties of teaching mathematics in English. The SPSS program calculated the ten items on the questionnaire related to the challenges with the English language. It included the mean scores, standard deviation, and ranking of the questionnaire items, and the results.

A. English Language Challenges

TABLE 2
MEANS AND STANDARD DEVIATIONS OF THE ENGLISH LANGUAGE CHALLENGES

No.	Rank	Item	M	SD
3	1	The problem of different words used for the same operation	3.56	1.22
4	2	Lack of mathematical vocabulary	3.44	1.15
7	3	Lack of descriptive vocabulary	3.44	1.15
1	4	different operations used with the same word	3.36	0.94
6	5	Lack of procedural vocabulary	3.36	0.90
5	6	The ambiguity of words: a word has different meanings in everyday and mathematical contexts (homophones)	3.36	0.80
10	7	Lack of mathematics concepts	3.28	0.88
9	8	Undeveloped reading comprehension skills	3.24	1.04
2	9	Unable to read between the lines	3.08	0.99
8	10	Lack of participation in mathematical discussions in class	3.04	0.93

The results indicate that items related to the problem of different words used for the same operation received the highest mean scores (3.56) with a standard deviation of (1.22). The means ranged between (3.56) and (3.04) with standard deviations of (1.22) to (0.88).

B. Online Learning

The researchers divided the second part of the questionnaire, which is related to online learning, into two parts: The first part is personal reflection, and the second is related to access to technology.

(a). Personal Reflection

The SPSS program calculated the difficulties with personal reflection. It included the mean scores, standard deviation, ranking of the questionnaire items, and the calculations in Table 3.

TABLE 3
MEANS AND STANDARD DEVIATIONS OF ONLINE CHALLENGES/PERSONAL REFLECTION

Item Statement	Rank	Personal Reflection	M	SD
1	1	It needs extra effort on the part of the teachers	4.08	0.94
9	2	Time-consuming	4.04	0.83
6	3	Difficult to follow up with students individually	3.96	0.97
2	4	Lack of learners' motivation to use e-learning	3.84	1.10
5	5	Inadequate technology skills	3.80	1.07
8	6	Family distractions around the teachers	3.60	1.28

The above Table 3 shows the personal reflection of teachers. Most respondents to the questionnaire (math teachers) agreed on the first item, ranking it first, with the highest mean score (4.08).

(b). *Inadequate Technological Skills*

TABLE 4
MEANS AND STANDARD DEVIATIONS OF ONLINE CHALLENGES/TECHNOLOGICAL ACCESS

Statement	Rank	Technological Access	M	SD
4	7	Limited internet access	3.52	1.25
10	8	Quality technology infrastructure	3.48	1.07
3	9	Internet availability	3.32	1.96
7	10	An unstable internet connection	3.28	1.13

The above Table 4 presents the statistical analysis, which shows the rank, mean scores, and standard deviation. Question four ranked seven with a mean score of (3.52) with a standard deviation of (1.25).

V. FUTURE LESSONS

TABLE 5
TEACHERS' PERSPECTIVES ON ONLINE LEARNING AND FUTURE LESSONS FROM THE INTERVIEWS

No	Categories	Teachers' pseudo names/grades
1	Developing and designing online course material	Amal 6th G._Suha 6th G._Muna 5th G._Samar 5th G._Nawal4th G._Faten4th G.
2	Resistance to technology	Amal 6th G._Suha 6th G._Muna 5th G._Samar 5th G._Nawal4th G._Faten4th G.
3	Continuity of online learning after COVID-19	Amal 6th G._Suha 6th G._Muna 5th G._Samar 5th G._Nawal4th G._Faten4th G.

The first future lesson is developing and designing online course material. All teachers agreed on this point because we live in the age of technology, which affects every aspect of people's lives. Moreover, teachers are witnessing how the education sector is moving towards using technology in teaching and learning. Governments and teachers must be ready for other crises.

Teachers of the sixth-grade future lesson on shifting to online learning were ineffective because teachers were unable to tailor the content of the textbook to fit online teaching.

"Working on producing and developing an efficient online copy of the content, which requires a new approach that involves the teacher, the students, and the course developers" (Amal 6th G._Suha 6th G.).

Preparing online course content is overwhelming and takes months rather than days. This unusual situation forced teachers to duplicate the paper textbooks and paste them into the online platform to fit the online environment. As a result, teachers and students were getting confused, trying to find a solution for technological teaching with the help of the Ministry of Education.

"The Ministry of Education, with the help of educational experts, must reconsider the course objectives and types of assessment, as well as the learning experience to fit online environment" (Muna 5th G._Samar 5th G.).

As a result of the unavailability of electronic course content, teachers failed to have effective teaching and learning. Since the shift came on short notice, the situation was disastrous, and teachers did not find proper assistance to start the process.

"The Ministry of Education must hold workshops and training courses for all teachers of all grades on online learning since this is a new way of teaching in the age of technology" (Nawa 4th G._Faten4th G.).

The second future lesson is managing resistance to technology. Unfortunately, most math teachers in English got used to approaches incompatible with today's advanced technology, and all these impediments suddenly floated to the surface during the pandemic.

"Providing teachers with practical training courses rather than theoretical ones. To encourage them, and schools can start with simple and applicable technological tools to give them a sense of achievement" (Amal 6th G._Suha 6th G._Muna 5th).

Moreover, the Ministry of Education and school principals can offer different intensives. These intensives are essential because it supports teachers' achievement and has schools full of online teacher users.

"The government or school principals can give awards or intensives to encourage teachers use technology during the process of teaching" (Amal 6th G._Suha 6th G._Muna 5th G._Samar 5th G._Nawal4th G._Faten4th G.).

The last future lesson is the continuity of online learning after COVID-19. Online knowledge, developed during the pandemic, must be improved since students need to build digital skills in the 21st century. Through blended learning, the digital skills and infrastructure developed during the pandemic can be refined and exploited in the post-COVID age.

"The government can provide accessible technological open sources to students and teachers" (Amal 6th G._Faten4th G._Muna 5th G._Nawal4th G._Faten4th G.).

We cannot go back to the previous situation as before. After the pandemic, the Ministry of Education must modify its attitude toward online learning and establish strict guidelines obliging all schools to use online learning. The Ministry of Education must also incorporate technology into the curriculum, or instructors must get the option to use blended learning.

It is time to have a profound reflection on the pre-pandemic curriculum. Modify the curricula to fit the new revolution of teaching and learning (Amal 6th G., Suha 6th G., Muna 5th G., Samar 5th G., Nawal 4th G., Faten 4th G.).

VI. DISCUSSION

This study attempts to explain the teachers' challenges in teaching math in English during the pandemic. This study addressed three questions. Q1: What English language challenges do teachers face while teaching mathematics in English? Q2: What online challenges do teachers face while teaching mathematics in English? Q3: What are the lessons to be learned from this experience from the perspectives of teachers? We can explain the findings according to the statistical analysis.

A. English Language Challenges

To answer the first question: what English language challenges do teachers face while teaching mathematics in English?

These results indicate that students have trouble figuring out the meaning of the vocabulary used to convey a mathematical concept. This problem appears to be much more significant as the learners move to higher grades because word problems become more complex in terms of linguistics and mathematical concepts. According to Blankman (2019), the problem of vocabulary, syntax, and grammar problems deepen learners' difficulties because they cannot understand math instruction and thus cannot participate in mathematical discussions. Blankman added that daily classroom discussions are crucial in solving the problem of math vocabulary.

Another challenge teachers face when teaching math in English is inadequate student reading skills. Our results indicate that poor reading skills. These results are in line with Reynard's (2018) arguments. According to Reynard, reading difficulties affect a student's academic achievement, including those in the subject of mathematics. Moreover, there is an agreement on the effects of reading on math results. The first and second challenges are interrelated because reading comprehension can solve word problems. Because EFL (English as a Foreign language) learners cannot comprehend the vocabulary in the content, they cannot recognise the text or answer the questions. If EFL learners read well, they can translate the content or phrases into numbers to solve mathematical word problems.

When EFL learners start reading English math textbooks, they encounter difficulties understanding the written math terminology that will help them solve the problem. Math textbooks usually cause doubt in EFL learners because books introduce new vocabulary, synonyms, and phrases that the teacher does not use interchangeably during math lessons. Moreover, math questions present limited, extra, or unnecessary information that can confuse learners, especially those who lack reading skills. In reading math questions, learners must assess and weigh the information presented in the question and determine which information is needed to solve the problem. In doing this, learners practice reading skills such as skimming, scanning, or searching for keywords to wrap up the information, which will help them solve the problem. One math teacher from the sample noted that most students suffer from inadequate English language proficiency and prerequisite English skills before learning math in English. So, math teachers put extra effort into teaching English vocabulary regarding math and teaching math simultaneously.

To answer question 2: What online challenges do teachers face while teaching mathematics in English?

B. Online Learning / Personal Reflection

Most teachers must bear the burden of the extra effort needed to teach online. Thus, because the pandemic put teachers in an unusual situation, this shift to online learning needed extra effort when preparing math lessons or organising the teaching content according to the platform selected by the school. Teachers had to know the whole online teaching system to cope with this new situation, even though some had never taught online before the pandemic. This result follows the results of Izhar et al. (2021), who studied most of the participants and declared that preparing lessons to fit an online teaching platform is time-consuming and requires extra effort from the teachers. Akbulut et al. (2020) added that even teachers with previous experience in online teachings, such as blended learning, stated that such lessons require excessive preparation time. This challenge is due to teachers' lack of familiarity with online teaching procedures (Hadija & Shalawati, 2017; Zhou et al., 2020; Izhar et al., 2021).

For online teaching to be successful, teachers had to transfer the textbook content to meaningful online teaching instruction. According to Anilkumar (2021), a successful online mathematics lesson requires building communication, interacting with one another, maintaining a relationship between teachers and students, and providing feedback about the instruction.

Another challenge math teachers face time-consuming. Half of the respondents encountered problems with time management. Teachers must provide feedback or individual assistance to every student and meet the severe challenge of teaching math in English online. As a result, they cannot spend enough time providing help or giving feedback to every student. Thus, this item from the questionnaire ranked third. This result is consistent with a study conducted by Barlovits et al. (2021), who concluded that supporting every student, giving feedback, providing individual contact, and assessing is time-consuming. Some respondents admitted that they had problems with learners' motivation levels. Other teachers considered unmotivated students to be a challenge while teaching online. According to Barlovits et al. (2021),

this challenge is due to the lack of face-to-face interaction. They claimed that, without this contact, it is difficult to maintain a student's motivation.

C. Online Learning /Inadequate Technological Skills

Another challenge questionnaire addressed was inadequate technological skills; this ranked fifth in the questionnaire. Respondents said this was the biggest challenge they faced at the beginning of the sudden shift to e-learning and that it hindered the goal of successful online teaching. To successfully integrate any technology into online Education, teachers must first master the technological skills needed for online teaching. Math teachers with little technical or e-learning experience had to start online teaching immediately. However, because some of these teachers lacked the required technological skills, they could not transfer or share math material online (Zhang et al., 2020). Teachers rarely practised teaching online before the pandemic.

Consequently, many teachers had difficulty learning math online (Trelease, 2015; Kurt, 2017; Meissel et al., 2017). Some of the respondents agreed with the item stating that a real challenge married teachers faced were family distractions. Most teachers lived in small flats with their children, and most nurseries and schools were closed (Zhang et al., 2020; Zhou et al., 2020). Consequently, many teachers identified parental responsibilities as a challenge affecting their online teaching (Reimers & Schleicher, 2020).

Limited internet access, the quality of the technological infrastructure, internet availability, and an unstable internet connection were ranked seventh through tenth, respectively, on the questionnaire. Other respondents considered access to technology a challenge that slows down the teaching of online lessons. Furthermore, participants agreed that these challenges are a stumbling block to the continuity of an effective e-learning process. Before the pandemic hit Jordan, the government did not investigate internet coverage and quality, and governmental or private schools did not use online lessons frequently or even very common. Suddenly, schools had to shift to online teaching, which in turn caused an increased load on the internet, overwhelming it and causing the system to become unstable because of the increased number of users. This result follows those of Akbulut et al. (2020) and Zhang et al. (2020), who stated that, in their studies, access to technology was a challenge. Moreover, buying laptops or mobile devices is another challenge for most Jordanian teachers, especially those with children of their own, because the price is not affordable for all families. As a result, the stability and availability of technological devices posed critical challenges.

D. Future Lessons

To answer question 3: What are the lessons to be learned from this experience from the perspectives of teachers?

The worldwide use of online learning resulted from the COVID-19 pandemic because it was the only viable pathway. Suddenly, teachers had to shift from classroom teaching to technology-mediated teaching using the textbooks and material used in face-to-face instruction. Unfortunately, most teachers failed to tailor the content of the books to fit online lessons. Lynch (2020) asserted that converting the course content into the digital form required specialised in Bloom's classification to define educational outcomes followed by verifying these outcomes. Other participants declared they were reluctant to obtain the information and skills necessary to convert the content into digital equivalents. They did not find the proper assistance to start the process. According to Park and Bonk (2007), this process requires a deep comprehension of the elements involved in the transformation. Moreover, in Sun et al. (2020) study, students asserted that teachers should be able to modify their lectures for the online setting rather than merely transferring traditional lessons online. It is worth mentioning that, before the pandemic, very few teachers were using technological devices for face-to-face learning, and some did not implement them into their face-to-face learning.

Surprisingly, most methods used to teach math in English today are incompatible with today's cutting-edge technology, and all these challenges suddenly surfaced during the pandemic. According to Ibnian (2019), teachers frequently employ the traditional approach.; therefore, teachers think using technology in the classroom is more of a burden than an advantage. This result is in line with a study by Shreaves et al. (2020), in which 76% of the responses mentioned the inability of online learning to provide the benefits of face-to-face teaching. Likewise, in a study by He and Xiao (2020), most teachers also preferred returning to a traditional face-to-face teaching environment sooner than later because it was difficult to monitor students' learning effectiveness and interact with students.

After the pandemic, one question remained on the mind of many teachers: Should e-learning continue, or should face-to-face instruction resume? The answer to question was answered directly after the pandemic. Remarkably, online Education has ceased after the pandemic, and regular face-to-face classes have resumed. This experience should make schools and the Ministry of Education reconsider developing a standard online education system that will function better in future emergencies. Accordingly, it is necessary to take several steps to encourage and facilitate adaptation to this new teaching approach. Schools could provide training sessions for teachers to improve their performance and the quality of Education. These training sessions assist teachers in reworking and adapting suitable teaching methods and learning how to interact with students in the online environment. Indeed, the government must offer teachers rewards for using technology more frequently. In addition, decision-makers must develop policies to facilitate learning technologies by generating circumstances in which professional growth by teachers is more important. Blended learning is an alternative to post-Covid learning because it maintains the online learning created during the epidemic and combines physical presence and social interaction, which are the primary characteristics of face-to-face learning.

Through blended learning, the digital skills and infrastructure established during the epidemic can be polished and utilised in the utilised-COVID era.

VII. CONCLUSION

During the COVID-19 pandemic in Jordan, both private and government schools Jordan forced to shift to e-learning by the government. This sudden shift presented all schools with serious challenges because most had not used any form of e-learning before the pandemic. Before the pandemic, teaching math to English language learners presented numerous difficulties for math teachers. However, after the pandemic, new challenges were added to the previous ones, with e-learning as a teaching medium.

The results of this study indicate that teaching math to school students in English is a serious problem. Students are not yet prepared to teach math in English, even if they have already started learning English as a foreign language. Teaching math in English requires a set word terminology in teaching math. However, teachers often met with challenges, such as students with undeveloped English reading comprehension skills and a lack of communication during math lessons. After the pandemic, technology challenges added a new complication to teaching math in English. Teachers face an enormous workload, and students are not skilled in working with technology. The results are consistent with the recommendations of UNESCO (2020), which considers successful access to technology key to successful online teaching. No one can deny that teaching math in English online has its challenges. However, these challenges can be met by preparing training courses for teachers to help them develop online teaching strategies and acquire the much-needed technological skills to avoid any shortcomings. In addition, schools can offer students preparation lessons that provide the required mathematical vocabulary and reading comprehension abilities.

The pandemic caused incalculable harm to the teaching process. Everyone involved must take lessons from this experience, considering the need to offer students better Education in the future. The study focused on teachers' perspectives regarding future lessons they learned from the experience of e-learning during the pandemic. One thing is sure; this experience should prompt educational institutions and the Ministry of Education to rethink creating a regular online education system that would perform better in emergencies. Teachers could receive training from schools to enhance their effectiveness and the standard of Education. These training programs help teachers revise and modify effective teaching strategies and learn how to communicate with students online. Teachers should receive incentives from the government to use technology more regularly. Additionally, policymakers must create conditions prioritising teachers' professional development to encourage learning technologies.

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Sereen Mousa Jubran is a Jordanian professor with a PhD in methodology/Teaching English Language. She works at Al Balqa Applied University/ Princess Alia University College. She has been working in the English Department since 2004. Most of her papers are on teaching English for EFL.

Muna Qteifan Al Fayeze is a Jordanian professor. She holds a PhD in Curriculum/Methods of Teaching Mathematics. She works at Al Balqa Applied University/ Princess Alia University College and has worked in the Faculty of Education Department. Most of her papers are on teaching math.

Jawahra Darwish Abueita is an Associate professor holding a PhD in Educational Technology. She works at Al Balqa Applied University/ Princess Alia University College in the Faculty of Education. All her Papers are on using Technology in Teaching and learning.