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COVID-19 Impact on the Implementation of Science Curriculum in Basic Schools from Teacher's Viewpoint

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ABSTRACT

This research aims to determine the COVID-19 impact on the implementation of science curriculum in basic schools from teacher's viewpoints. The study population in general consists of all science teachers who are working at the schools related with the General Directorate of Erbil government in Iraqi Kurdistan, and they were (1765) science teachers in the basic stage in the academic year 2021-2022, where the study sample consisted of (765) science teachers (438) of them females, and (327) males. The researchers used a questionnaire prepared by researchers. Data was analysed by using the Statistical Package for Social Sciences (SPSS). The statistical procedures used for data analysis in this study included frequencies and percentages, as well as the Pearson correlation coefficient. The results indicated that a COVID-19 pandemic has had a variety of impacts on the education sector, including curricular delays; group and individual absences; and students forgetting previous lessons. Furthermore, online teaching has not been successful at all which has caused teachers to be unable to conduct their study plans. In light of the results, some recommendations were presented.

Keyword: COVID-19 pandemic, curriculum, online teaching, schools.

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Introduction:

Coronaviruses are a large viral family. The majority of coronavirus strains produce mild symptoms such as the common cold. The first human coronavirus was discovered in 1965 from the respiratory tract of an infected patient complaining of the common cold (Jahangir, Muheem and Rizvi, 2020). The virus appeared and spread more than one time during past years since the new types of them appeared were detected in Wuhan, China, in December 2019 (Daniel, 2020). Coronavirus disease (COVID-19) is an infectious disease caused by the SARS-CoV-2 virus. According to the World Health Organization (WHO), coronaviruses are a type of virus that can cause illnesses ranging from the common cold to more serious illnesses such as Severe Acute Respiratory Syndrome (SARS) and Middle East Respiratory Syndrome (MERS) (WHO, 2021). The COVID-19 pandemic has had a widespread impact on all parts of society, including education (Widagdo and Anshori, 2019). And while the virus is spreading across countries, the World Health Organization has declared COVID-19 a pandemic (Singh, 2021). In an effort to stop the spread of the virus During the COVID-19 pandemic, most governments around the world have temporarily closed schools and other educational institutions. The COVID-19 pandemic has caused the largest disruption to education systems in human history, affecting nearly 1.6 billion students in more than 200 countries. More than 94 percent of children worldwide have been affected by the closure of schools, institutions and other places of learning, so Many scholars have shared their findings about teaching and learning in different ways in the wake of the COVID-19 outbreak. Face-to-face instruction has been cancelled in a number of schools, colleges and universities (Pokhrel and Chhetri, 2021). Likewise, the Ministry of Education in the Kurdistan Region of Iraq moved quickly to close all schools in response to the global outbreak of the Corona virus. The main reason for closing educational centres around the world is that teachers, students and school staff are the source of the spread of the deadly COVID-19 virus because they are more protected at home (Singh, 2021). As a primary measure for curve flattening and transmission management, lock-and-stay techniques were devised (Sintema, 2020). The pandemic and its impact on curricula and continuing education as a result of the suspension of face-to-face lessons, as well as the need to maintain continuity of education, pose challenges for countries that have responded with a variety of distance learning options and solutions such as adjusting the school calendar, how to apply, prioritize, and adjust appropriate curricula in different ways. To make adjustments, it is necessary to consider features of national or subnational curricula, state resources, capacity to establish distance learning processes, levels of discrimination and inequality in education in different regions, and the length of the school year. In the early years of the school year, it was decided to close the school more than once in the 2020-2021 years (ACAPS, 2020). With more days lost due to school closures and scheduling models, curricular choices have been delegated to schools and teachers, and quality assurance and assessment measures have been relaxed at all levels of education (Hoadley, 2020).

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Research problem

The epidemic affected all aspects of daily life, the education sector is one of the aspects affected by this epidemic as a result of the conditions that the entire world is currently going through, represented by the spread of the Corona virus, which had a severe impact on the educational process and academic process, as academic activities in schools were suspended, causing sudden changes in the nature of students' lives, classrooms and extracurricular activities (Kazm, 2021; Unshur, 2021). The outbreak of the COVID-19 virus, which disrupted the normal system for delivering lessons and implementing curricula in schools, has had a major impact on the Kurdistan Region - Iraq. This study surveyed teachers about how the science curriculum is implemented in basic schools, the impact of COVID-19 on study, curriculum delays on students, and teachers' willingness to teach and learn students in the classroom and online during the COVID-19 outbreak. The study also looked at how to reduce impact and what needs to be done to influence learning. Nowadays, if we attend the discussion of science curricula, teaching topics, and take a look at teaching during the COVID-19 pandemic, you will be aware of a new problem in teaching and methodological application, which has been around for nearly 3 years and still exists. The Ministry of Education has introduced distance learning into TV, internet and private websites called (Hewre feerge). All these efforts led to the provision of distance education in government schools that teach children. Unfortunately, many children have not been able to access distance learning programs due to a lack of support from the Ministry of Education and a lack of infrastructure for electronic means. According to the data, more than 95% of students in Denmark, Slovenia, Norway, Poland, Lithuania, Iceland and Austria, as well as Switzerland and the Netherlands, own a computer for work and learning (OECD, 2020). But in the Kurdistan Region, most students do not have their own computers or smartphones, nor do they have good internet lines. From the data, we can imagine that it is not easy to implement online learning (GOV.KRD, 2022). Despite the role that the Internet and social networking sites play in the continuity of academic activities, and teaching in general, the success of such a transformation requires the availability of the necessary technical means, as well as for trained and experienced work teams in this field (Izzudin Busnaina, 2020). Therefore, the research problem can be formulated in the following question:

What is the impact of COVID-19 on the implementation of the science curriculum in basic schools from the point of view of teachers?

Significance of the study:

The importance of this study is that it contributes to bridging the research gap in studies of how to apply the curriculum during crises such as the Corona epidemic, and it allows as knowing the opinions of teachers about the study and application of the curriculum and the possibility of teaching on the Internet. The study has psychological, social, and scientific importance for the educational process, and the results of this study can provide academic institutions with information that helps

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them in developing academic programs and informing them of the opinions of teachers and specialists in the educations field, especially for educational officials to solve curriculum problems related to the study, delays in study and curriculum, and how to implement the curriculum in good and new ways Where it monitors the stage in the life of teachers and their issues. The psychological situation they face in the face of the pandemic has affected all walks of lives. The education sector is one of the areas affected by this pandemic (Yulia, 2020). Through COVID-19, we can reshape our education for future generations by changing traditional teaching methods in the classroom, taking advantage of other methods such as the Internet and delivering lessons to the open community outside of the classroom. Here, COVID-19 being a pandemic shows how global we are. Successful people in the coming decades must also be able to understand this interconnectedness, navigate across borders to take advantage of their differences, and work collaboratively globally (Luthra Poornima, 2020). In this era of pandemic, core skills require creativity, communication, collaboration, empathy, intelligence, and the ability to work across demographic lines of difference to harness the power of teamwork through effective teamwork. The ultimate change is unleashing technology to deliver education. This COVID-19 pandemic has resulted in educational institutions creating distance learning content for students in all sectors (Bozkurt *et al.*, 2020). The educational system and other institutions have been severely affected by this pandemic. The research will help in understanding the effects of this pandemic on the entire education system, educational institutions, and curriculum implementation, as well as research findings that clarify issues related to curriculum implementation and participation in e-lessons and practical lessons, as well as related problems. It also shows the percentage of fears and anxiety and the psychological aspect of teachers during teaching (Süt and Öznaçar, 2021).

Research objective:

The objective of this study is to know:

The impact of COVID-19 on the implementation of the science curriculum in basic schools from the point of view of teachers ?

Research limitations:

The generalization of the results of this research is determined in the following limits:

Objective limits: This research was based on the knowledge of the impact of COVID-19 on the implementation of science curricula in basic schools from the point of view of teachers in the Kurdistan Region of Iraq.

Location limits: This research is limited to science teachers in the General Directorate of Education in Erbil in the Kurdistan Region of Iraq.

Deadline: This study was conducted in the academic year 2020/2021.

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Determination of terms:

COVI-19 pandemic: COVID-19 is the pandemic caused by the new coronavirus called SARS-CoV-2. This new virus was first discovered by the World Health Organization on December 31, 2019, after a cluster of cases of viral pneumonia was reported in Wuhan, People's Republic of China, and belongs to a family of viruses that may cause illness in animals and humans and cause respiratory disease. Its severity in humans ranges from the common cold to more severe illnesses, the most severe of which are Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS). (NDI, 2020; GOV.KRD, 2021; Shkhaydam., 2021; Tolba and Mohamed, 2021)

The Curriculum: is a strategic approach that includes all laws, administration, books, activities, and methods through which schools and educational centers are run. It is a long process that obligates the student upon entering the school until his graduation, and all the educational staff, the school directorate, teachers, and students complete each other to apply it. (Researcher)

Science curriculum: The science curriculum at basic schools in the Kurdistan Region includes the various sections of the general science department, such as biology, physical, chemistry, some geological lessons, etc.). One of the most important basic education curricula is those taught sequentially and linked from the first grade to the twelves grade, and which revolve around the goal of unified learning. (Researcher)

Theoretical background:

1. COVID-19 impact of educational aspect:

COVID-19 is particularly affecting teachers and their work from all aspects of health, economics, pedagogical and psychological aspects as they face difficulties and challenges in implementing curricula and sending lessons to students in a natural way with the emergence of COVID-19, teachers and learners face many concerns due to their environment. At the start of the pandemic, as of this writing, school members will have more cases of illness due to COVID-19 even deaths on the health side. In economic terms, the research showed a direct impact on this aspect, as it reduced the budget for directorates and schools, and due to the closure of schools, reduced the salaries of lecturers in every two academic years 2020-2021. Psychologically, so far, some educational cadres continue to work with great fears of the disease, but on the other hand, the majority of teachers and learners are naturally looking at the epidemic now, and this is good news. With all these difficulties, there are also challenges that teachers and students have faced in distance education over the past years. Khalif (2020), citing Al-Qiq and Hdmi, explains that there is a big difference between the process of (distance learning) and (distance education in emergency and crisis situations). What happened during the COVID-19 pandemic about moving teaching from the traditional system to distance learning through technology. As the student is

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the main component of distance learning or e-learning, but in the case of the epidemic, the teacher or lecturer remained the only source of information, without a role for the student, as the traditional education system was replaced by an educational system only first request. Technically, without taking into account the pedagogical foundations in the distance learning process in terms of design, evaluation and presentation. Another, investing in technology in communicating with students and using technology in providing services is not evidence of distance learning (Al-Qiq and Hdmi, 2021) .Another important thing due to COVID-19 is the inequality in education especially in online teaching. One possible consequence of school closures is increased inequality in education and skills. Inequality in child outcomes may appear when a family's ability to invest in its children is hampered by financial constraints, or the stress of poverty (Doyle, 2020). In the Kurdistan region of Iraq, the epidemic has caused more than one problem, such as closing schools; Curriculum lag sickness; fear and anxiety in teachers and students; absence of the teacher and students; and problems of accessing online learning platforms.

2. Curricula and methods of teaching science:

In the science teaching curriculum; it is a method that the teacher relies on in the teaching and learning process. They are the means, systems, and methods that the teacher uses to acquire students' knowledge and information with minimal effort and as quickly as possible. It is a systematic procedure in the use of scientific materials and educational resources. Apply this in such a way that students learn in the easiest way possible without trial and error (Al-Moussawi, 2019). Furthermore, teaching should provide students with opportunities to seek answers to questions by means of practical methodological studies such as practical investigative work to develop their skills. This means that the competence, ability, and commitment of the teacher are have great importance to success in the mission of the school (Ndurya and Almers, 2020). Ideally, teachers should use a variety of teaching strategies and materials with the goal of maximizing the impact and effectiveness of teaching (Stuckey et al., 2013). Teaching Methods the teacher should be responsive, supportive, and flexible which is optimal for developing interest. Teaching methods that allow this type of interaction between the teacher and the student promote the assimilation of the goals and objectives of the curriculum, which is necessary for the development of individual interest (Juuti et al., 2010). We can divide science teaching into two stages; the first stage before COVID-19 and second stage during COVID-19. First stage: Before COVID-19, science lessons looked largely traditional. With direct instruction, students learn by solving basic problems, reading textbooks, experiments, lectures, worksheets, and exploring materials, as well as doing practical work (Crider, 2013). Classes rarely visit locations outside of the classroom, and fewer experts visit science classes. In most cases, the lesson depends on the efforts of the teachers and the response of the students by teaching traditional methods aligned with the science lesson. The science curriculum in the Kurdistan Region of Iraq (Science for All) includes mixed subjects from biology, physics, chemistry, geology, and other human

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sciences. As for teaching, teachers use different methods that are compatible with their own efforts and capabilities and are not forced to use a particular method. A teacher's pedagogical practice is one of the key factors that contribute to what students learn and how they learn (Ali et al., 2020). "Teaching practice" is a process in which the curriculum is interpreted and experimented with different forms of teaching. At the very least, teaching should be done in relation to the people who are going to learn. One way or another, the requirements for cognitive achievement must be met and combined with the student's individual ability as a unique person. One way to approach this long-standing educational question is to consider the characteristics of interaction and communication in the classroom. It is important for all students to participate and communicate actively about the content they will learn from (Frank, Schmidt and Sundberg, 2022). The second phase during COVID-19 Almost all ministries of education in the world depend on online teaching methods, including the Ministry of Education in Kurdistan. It also relies on electronic sources to send lessons to students on different platforms, such as online lessons (hewre feerge website), recorded lessons, and broadcasting on TV (local and satellite educational channel). Those methods can be in the ruins of the 2019-2020 school years, and this way helps them in 2021 with some classroom teaching for this year. In the fourth section of this research, we will read the results of participation on all electronic platforms. And we must not forget that a specialized committee from the ministry summarized the syllabus to keep only the important lessons that were adapted to time in 2021 because schools were closed during teaching times due to the pandemic. In the classroom, students are not obliged to go to the classes but they can continue to learn online at their own will after signing the special covenant in order to continue and study on the electronic platforms at home. Typical learning and rotation schedules made lessons essential to cover the curriculum and study at home. Despite the difficulties, school principals noted the difficulty of managing the home learning component of the curriculum and relied on parents' ability to participate, manage, and assist with schoolwork. The Ministry's guide gives a lot of focus and advice on blended learning and how to manage the different aspects of learning at home. Although well-intentioned and well-organised, with no communication assumptions on the part of the learners, the results are largely unsatisfactory and realistic for the majority of schools and teachers (Hoadley, 2020).

3. The role of teachers in implementing the curriculum in the time of COVID-19:

COVID-19 in general affects teachers and their work in all aspects. When COVID-19 emerged, teachers compulsorily faced more challenges in terms of psychological, health, physical, economic, or educational. Moving away from schools and students, it is difficult for them to send lessons to students directly, because sometimes all schools are closed and at other times most schools are closed, causing disruption to study and implementation of the curriculum in the normal approach. The teacher leaves his classroom for his home or other convenient location when you are under stress from

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nature during school hours. Likewise, students contract some infectious diseases as a result. Consequently, students and teachers may miss coverage of some important curriculum content (Obilo and Sangoleye, 2015). Research on the challenges and difficulties science teachers faced before COVID-19 showed that the science curriculum posed many problems, such as workload, lack of teaching tools, large number of students in class, and short class duration. The difficulties and challenges have increased with the advent of COVID-19. These problems are caused by many factors, such as the fact that teachers have not empirically tested conditions like this to implement alternative curricula or approaches that do not exist in times of crisis in schools. The teachers were surprised by a completely new situation, so it was only natural to expect some problems in teaching. Teachers have outlined measures in place in science classes to limit transmission of the virus and send curricula to students. These measures are likely to affect teachers' ability to facilitate learning in science, particularly the practical and investigative aspects of the curriculum (Chadwick and McLoughlin, 2021). Teachers have worked admirably during COVID-19 over the past years, facing great challenges to complete the school year and survive the potential loss, especially in 2020 and 2021. Teachers are the first line in implementing the curriculum as they continue to teach in class or online despite the suffering and fears of illness.

Previous studies:

(Hoadley, 2020)This working paper entitled *(Schools in the Time of COVID-19: Impacts of the Pandemic on Curriculum),* presents the findings of research into the impact of the COVID-19 pandemic on the curricula in South Africa, and the central approach taken in the report is to review the available evidence on the impact of COVID-19 on curricular issues, teaching, learning, and assessment: The outcome of the article indicated the number of school days and the proportion The percentage of the school calendar for the pre-COVID-19 calendar, where (5th and 8th grades) and (4th and ninth grades) have the largest percentage of absentees. Days of the pre-COVID-19 calendar (42%, 39%, respectively) for the seventh and twelfth grades lost the fewest school days, with priority given to reopening primary and secondary grades upon exit from school. The table also shows that, in terms of the absolute number of days retained, the range is from 118 days to 168 days. As a result, 12th graders had more school days available than a normal year as a result of their early return to school and delays in the National Senior Certificate Examination (NSC or "matric"). The first grades lost a third of the entire school year. The result of the research was an indication that all planning and thinking regarding curriculum restoration in relation to the National Curriculum through its clear text of content and speed guidelines, education departments, schools, and teachers were precisely identifying what is covered and what is not covered. This is the power of very specific methods. It also made it possible to identify key concepts, content, and skills in terms of progression, because the original requirement was generally coherent and clear across grades.

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(Khlaif *et al.*, 2021) Study entitled *(The COVID-19 epidemic: teachers' responses to school closure in developing countries):* This article presents a case study of Afghanistan, Libya, and Palestine as developing countries that experienced violence for many years prior to the COVID-19 crisis. Focuses on how middle school teachers are responding to school closures to combat the spread of COVID-19. The researchers used a qualitative approach. Twenty-two (22) teachers from these countries participated in the study to collect data, and various qualitative strategies were used, including semi-structured interviews with teachers who demonstrated technological initiative to use ICTs. In addition, three focus group sessions were conducted with teachers, with each focus group consisting of seven to eight participants from diverse backgrounds. Furthermore, the researchers attended six different online educational sessions. The study found that teachers developed their skills to use emerging technologies and design appropriate digital content. Moreover, they have established strong relationships with the local community in order to accept responsibility for Emergency Distance Learning (ERL) by establishing community centers for students from low-income families.

(Mafugu and Abel, 2022) Study entitled *(Lecturer Support in the Implementation of a New Curriculum during the COVID-19 Pandemic):* The aim of the study was to assess the support provided to lecturers in implementing a new curriculum during the COVID-19 pandemic to suggest early intervention strategies that address resource and knowledge gaps that have a negative impact on curriculum implementation. A survey design was used in the study. A representative sample of thirty (30) lecturers was randomly selected from five departments of the College of Natural Resources Management and Agriculture to complete the questionnaire between June and July 2020. The results indicate that the majority of lecturers participated in curriculum development, and the data were analysed using the Statistical Package for Social Sciences (SPSS) version 27. Statistics descriptive: The frequencies, means, and standard deviations of the lecturers' responses were generated based on Likert scale data entered into SPSS. The Spearman's rank correlation coefficients were calculated on the re-administered questionnaire items to determine the consistency of the participants' answers.

(Fatah *et al.*, 2022) study entitled *(The Effect of Curriculum 13 Implementation on Physical Education Learning Competencies of Elementary School Students during the COVID-19 Pandemic):* The purpose of this study was to study the effect of applying Curriculum 13 on enhancing physical education and physical education competencies for primary school children during the COVID-19 pandemic. This investigation was conducted in government primary schools within Gubug District, Grobogan Regency. The combined number of physical education teachers and fifth graders is 1,249 students. The tool uses a questionnaire. The data analysis used descriptive analysis divided into two sets of quantitative and qualitative data. The statistical analysis included descriptive analysis to calculate the default mean, standard deviation, and frequency distribution (percentage). The results of the previous research on the

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completion of the 2013 syllabus as a means and infrastructure for the implementation of the 2013 syllabus as well as the planning of learning are very good at 100% on the completion of the syllabus and 100% good tutorial planning. The treatment phase of learning implementation ran well at 60% and trusted assessment implementation ran well at 60%. The true score for the outcome stage was 49.2% in the good category, 45.4% in the poor category, and 0.0% in the very poor category. Only 5.4% of students' assessment results fall into the very good category. It was found that implementing physical education learning with the 2013 curriculum during the COVID-19 pandemic still needed recommendations because it was not able to function optimally.

(Khairi *et al.*, 2022) study entitled *(Analysis of Elementary School Teacher Needs in Learning in the Era of the COVID-19 Pandemic):* The purpose of this study is to reveal teachers' perceptions of learning needs in the era of the COVID-19 pandemic. This study used a case study design involving primary school teachers' data collection using a questionnaire and open interviews. The survey was conducted to determine the teacher's view and practice of implementing learning at the primary school level during the COVID-19 pandemic. The target of the online survey is primary school teachers in Bengkulu, Indonesia. The use of purposeful samples in case studies deepens and enriches the information. The integration of questionnaires and interviews helped researchers evaluate teacher opinions and assessment practices online. The researchers took 82 participants from teachers who teach primary schools in Bengkulu Province, Indonesia. Data analysis was performed following established procedures for item analysis and observations. A Purposeful sampling technique was used by distributing questionnaires online using Google form. The results of the survey conducted show that teachers face educational obstacles and needs in the era of COVID-19, so they need support from various parties.

Research Methodology:

Research design:

This research is quantitative and uses a descriptive research approach, focusing on the perceptions of science teachers in Erbil Governorate in the Kurdistan Region of Iraq about the impact of COVID-19 on the implementation of science curricula in basic schools from the teachers' point of view. To answer the study's objectives, relevant data was collected using a questionnaire sent via mail and social media to a sample of science teachers in the Erbil Governorate in Iraq's Kurdistan Region.

Population and sampling of the study:

The current research community consists of (1765) science teachers in the Directorate of General Education in Erbil, Kurdistan Region of Iraq. The study sample consisted of (765) male and female teachers, who were divided into (438) female teachers and (327) male teachers.

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Research tool:

The researchers used a questionnaire for collecting data after achieving its validity by using face validity, and the reliability by used test-retest on a sample of (20) male and female science teachers who were selected from the directorates of Soran and Rawanduz, and then the application was repeated on the same individuals after (14) days and using the Pearson correlation coefficient to calculate the relationship between the application scores , the first and second applications showed that the correlation value was (0.81), which is a good indicator of the stability of the tool. .

Statistical analysis:

Data were analysed by using the Statistical Package for Social Sciences (SPSS). The statistical procedures used for data analysis in this study included frequencies and percentage, As for the reliability tool, the researcher relied on the Pearson correlation coefficient. quality of the test-retest

Result of the study:

1.The answers of the sample members to the paragraph saying (Is COVID-19 still dangerous?), The answers came by choosing the first alternative (yes) by (26.4%) and by choosing the second alternative (to some extent) by (49.6%), while the answers came by choosing the alternative (No) at a rate of (1.6%), while there were answers by choosing the alternative (I don't know) by (22.5%), and table (1) shows that.

Table (1) distribution of the sample answers to question number one

N.	Question	Answer	Frequency	Percent
1	Is COVID-19 still a danger?	Yes.	202	26.4
		To some extent	379	49.6
		No	12	1.6
		I do not know	172	22.5
Total			765	100.0

It is clear from Table (1) that the largest number of respondents (49.6%) believe that COVID-19 is still somewhat dangerous.

2.The answers of the sample members to the question saying (Does COVID-19 have any work to delay the education program?), The answers came by choosing the first alternative (yes) by (88%) and by choosing the second alternative (to some extent) by (10.2%), while the answers came by choosing the alternative (No) at a rate of (0.1%), while there were answers by choosing the alternative (I don't know) (1.7%), and table (2) shows that.

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Table 2: Distribution of the samples' answers to question number 2

N.	Question	Answer	Frequency	Percent
2	Does COVID-19 have any work to delay the education program?	Yes.	673	88.0
		To some extent	78	10.2
		No	1	.1
		I do not know	13	1.7
Total			765	100.0

It is evident from Table (2) that the largest number of respondents (88%) believed that COVID-19 caused delays and losses in the curriculum, and had the greatest impact on grades 1, 2 and 3. Studies conducted in developing country contexts demonstrated educational losses Similar results from school closures due to (closure) in the pandemic disaster, otherwise the curriculum in our country is highly dependent on continuous learning at home and school together, the ability to provide support and commitment to work in addition to the availability of educational resources at home (books, materials, computer).

3.The answers of the sample members to the question saying: (Did COVID-19 prevent you from implementing teaching plans?),The answers came by choosing the first alternative (yes) by (63.3%) and choosing the second alternative (to some extent) by (31.2%), while the answers came by choosing the alternative (No) by (0.1%), while there were answers by choosing the alternative (I don't know) (5.4%), and Table (3) shows that.

Table 3: Distribution of the Samples' answers to paragraph number 3

N.	Question	Answer	Frequency	Percent
3	Did COVID-19 prevent you from implementing teaching plans?	Yes.	484	63.3
		To some extent	239	31.2
		No	1	.1
		I do not know	41	5.4
Total			765	100.0

It is evident from Table (3) that the largest numbers of respondents (63.3%) believe that COVID-19 has disrupted the daily schedule and planning for teaching the curriculum. Teachers have been forced to re-plan and change teaching schedules to adapt to the situation created by the pandemic.

4.Respondents' answers to this question: (Were you able to teach students when school was closed due to COVID-19?), Respondents chose the first alternative (yes) with (7.7%) and chose the second alternative (to some extent) (36.8%), when the

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answers chose the alternative (No) with a percentage (52.5%), while there were answers by choosing the alternative (I don't know) (2.9%), and Table (4) shows that.

Table 4: Distribution of the Samples' answers to paragraph number 4

N.	Question	Answer	Frequency	Percent
4	Were you able to teach students when school was closed due to COVID-19?	Yes.	59	7.7
		To some extent	282	36.8
		No	402	52.5
		I do not know	22	2.9
Total			765	100.0

It is clear from Table (4) that the largest number of respondents (52.5%) answered (No), they believe that COVID-19 disrupted the teaching of curricula and that more than half of the teachers were unable to send lessons for students during quarantine, despite the provision of a link and a special website for teaching. Online education has not been able to bridge this gap due to communication problems with students, and the government can work to address it and prepare for future challenges.

5.The answers of the sample members to the paragraph saying (Did the Ministry of Education have a pre-planned plan for situations similar to COVID-19?), The answers came by choosing the first alternative (yes) by (9.5%) and by choosing the second alternative (to some extent) by (23.2%), while the answers came by choosing the alternative (No) at a rate of (7.9%), while there were answers by choosing the alternative (I don't know) (59.2%), and table (5) shows that.

Table 5: Distribution of the Samples' answers to question number 5

N.	Question	Answer	Frequency	Percent
5	Did the Ministry of Education have a pre-planned plan for situations similar to COVID-19?	Yes.	73	9.5
		To some extent	178	23.2
		No	61	7.9
		I do not know	453	59.2
Total			765	100.0

It is clear from Table (5) that the largest number of respondents (59.2%) answered (I don't know), and the result showed that more than half of the teachers had no information about the Ministry's plans for crises.

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6.The answers of the sample members to the paragraph (Did the Ministry of Education's actions lead to a decrease in the impact of the lost curricula?). By choosing the first alternative (yes) by (44.6%) and choosing the second alternative. (To some extent) by (39.1%), while the answers came by choosing the alternative (no) by (13.6%), while there were answers by choosing the alternative (I don't know) (2.7%) and the table. (6) shows that.

Table 6: Distribution of the Samples' answers to question number 6

N.	Question	Answer	Frequency	Percent
6	Did the Ministry of Education's actions lead to a decrease in the impact of the lost curricula?	Yes.	341	44.6
		To some extent	299	39.1
		No	104	13.6
		I do not know	21	2.7
Total			765	100.0

It is clear from Table (6) that the largest number of respondents (44.6%) answered (yes), and the result showed that the Ministry's plans were not up to the teachers' aspirations to reduce the impact of the epidemic on the lost curricula.

7.The answers of the sample members to the paragraph saying (How many benefits did you get online from the time of COVID-19?), The answers came by choosing the first alternative (25% or less) by (82.8%) and choosing the second alternative (26-50%) by (12.9%), while the answers came by choosing the alternative (51-75%) by (2.5%), while there were answers by choosing the alternative (76% or more) (1.8%), and Table (7) shows that.

Table 7: Distribution of the samples' answers to question number 7

N.	Question	Answer	Frequency	Percent
7	How many benefits did you get online from the time of COVID-19?	25% or less	633	82.8
		26-50%	99	12.9
		51-75%	19	2.5
		76% or more	14	1.8
Total			765	100.0

It is clear from table (7) the largest number of respondents about 83% answered "25% or less". This is not a good and unhappy answer at all, it seems that students and teachers have not benefited from online teaching, this shows that online platforms are not good in our country, lack of proper training for both schools and teachers has been identified as a barrier to uptake of ICT It is often overlooked because it is so

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expensive. Teachers have felt uncomfortable teaching remotely, especially since there are other factors added to the lack of training, such as limited technology available at home, insufficient equipment at school, or technical problems with technology-assisted teaching. Teachers also encounter internal barriers including computer anxiety, fear of technology, and sometimes poorly defined roles, as they sometimes view their role as merely teaching and see the ICT component as a separate thing, simply adding to their daily tasks and overburdening the time specified in the schedule.

8.The answers of the sample members to the paragraph saying (Do students have the experience to share lessons online?), The answers came by choosing the first alternative (25% or less) by (79.2%) and choosing the second alternative (26-50%) by (16.6%), while the answers came by choosing the alternative (51-75%) by (3.7%), while there were answers by choosing the alternative (76% or more) (0.5%), and Table (8) shows that.

Table 8: Distribution of the samples' answers to question number 8

N.	Question	Answer	Frequency	Percent
8	Do students have the experience to share lessons online?	25% or less	606	79.2
		26-50%	127	16.6
		51-75%	28	3.7
		76% or more	4	.5
Total			765	100.0

It is clear from table (8) the largest number of respondents 79.2% answered "25% or less". This is also not a good answer, as students in public schools do not seem to have prior experience with online teaching platforms, and therefore, students may feel feelings of isolation, which can affect their level of confidence in online learning and this interferes with their sense of belonging. In a study conducted in China during the current outbreak, I identified a lack of experience with online teaching and related materials to support it, the short period available for preparation and insufficient support from educational technology staff as the main challenges for the transition to online teaching. Despite the identified obstacles and difficulties, the transition to online teaching represented an opportunity for educational success in the past years during the pandemic.

9.The answers of the sample members to the paragraph saying (Did Internet Lessons Reducing Curriculum Loss?), The answers came by choosing the first alternative (yes) by (37.5%) and by choosing the second alternative (to some extent) by (28.9%), while the answers came by choosing the alternative (No) at a rate of (37.5%), while there were answers by choosing the alternative (I don't know) (4.5%), and table (9) shows that.

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Table 9: Distribution of the samples' answers to question number 9

N.	Question	Answer	Frequency	Percent
9	Did Internet Lessons Reducing Curriculum Loss?	Yes.	287	37.5
		To some extent	221	28.9
		No	223	29.2
		I do not know	34	4.5
Total			765	100.0

It is clear from Table (9) that the answers were very close. None exceeded 40%, 37% answered yes, and 29% answered 'to some extent' and 'No'. These answers indicate differences in the delivery of lessons online from one area to another in some villages and districts; they do not have any Internet. But access to networks is better in the city centres.

10.The answers of the sample members to the paragraph saying (Is the environment of students, teachers and education system in the Kurdistan Region able to rely on teaching via the Internet after COVID-19?), The answers came by choosing the first alternative (yes) by (2.7%) and choosing the second alternative (to some extent) by (12.8%), while the answers came by choosing the alternative (No) by (82.7%), while there were answers by choosing the alternative (I don't know) (1.7%), and Table (10) shows that.

Table 10: Distribution of the samples' answers to question number 10

N.	Question	Answer	Frequency	Percent
10	Is the environment of students, teachers and education system in the Kurdistan Region able to rely on teaching via the Internet after COVID-19?	Yes.	21	2.7
		To some extent	98	12.8
		No	633	82.7
		I do not know	13	1.7
Total			765	100.0

It is evident from Table (10) that the largest numbers of respondents, about 83%, believe that our environment is unable to rely on online teaching after COVID-19. Most teachers do not see any future in our country for online teaching, but I believe that the use of the Internet and multimedia technology has the potential to change the way knowledge is presented and act as a viable alternative to traditional classroom learning. Online learning includes additional equipment, such as smartphones,

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computers or tablets, which can be used to access information from anywhere and at any time. In addition, I believe that if we have an infrastructure, a high-quality Internet, a private channel, a website, an educational link and platform for learning, a good management system for education, why not. So if we work on it, we can develop it as I see a future for e-learning.

11.The answers of the sample members to the paragraph saying (Is it possible to control the online class as classroom classes?), The answers came by choosing the first alternative (yes) by (3.0%) and choosing the second alternative (to some extent) by (32.2%), while the answers came by choosing the alternative (No) by (45.8%), while there were answers by choosing the alternative (I don't know) (19.0%), and Table (11) shows that.

Table 11: Distribution of the samples' answers to question number 11

N.	Question	Answer	Frequency	Percent
11	Did students have access to practical lessons while the school was closed during COVID-19?	Yes	23	3.0
		To some extent	246	32.2
		No	350	45.8
		I didn't know	145	19.0
Total			765	100.0

It is clear from table (11) that the largest number of respondents 45.8% believe that students were not able to obtain practical lessons during the school closure during COVID-19, according to the result of table number (47,48). Practical lessons taught before and during COVID-19 are less than 25%, so it is clear that students did not have access to practical lessons.

12.The answers of the sample members to the paragraph saying (Is it possible to implement the practical lessons online?), The answers came by choosing the first alternative (yes) by (3.4%) and choosing the second alternative (to some extent) by (26.1%), while the answers came by choosing the alternative (No) by (59.7%), while there were answers by choosing the alternative (I don't know) (10.7%), and Table (12) shows that

Table 12: Distribution of the samples' answers to question number 12.

N.	Question	Answer	Frequency	Percent
12	Is it possible to implement the practical lessons online?	Yes	26	3.4
		To some extent	200	26.1
		No	457	59.7
		I didn't know	82	10.7
Total			765	100.0

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It is clear from Table (12) that the largest number of respondents about (60%), believe that it is impossible to implement practical lessons online, so the best method is hybrid teaching or blending during crises while adhering to preventive instructions because it is impossible to apply online practical lessons and tests in the best method.

13.The answers of the sample members to the paragraph saying (Can online teaching be a viable alternative to classroom teaching?), The answers came by choosing the first alternative (25% or less) by (88.8%) and choosing the second alternative (26-50%) by (9.3%), while the answers came by choosing the alternative (51-75%) by (1.4%), while there were answers by choosing the alternative (76% or more) (0.5%), and Table (13) shows that.

Table 1: Distribution of the samples' answers to question number 13

N.	Question	Answer	Frequency	Percent
13	Can online teaching be a viable alternative to classroom teaching?	25% or less	679	88.8
		26-50%	71	9.3
		51-75%	11	1.4
		76% or more	4	.5
Total			765	100.0

It is evident from table (13) the largest number of respondents 88.8% answered "25% or less" Therefore, most teachers do not see online lessons as an alternative to the classroom, because the difficulty of communicating with students and parents makes it difficult for teachers to supervise students, which is why teachers find it difficult to implement the distance learning curriculum. Additional challenges associated with the implementation of lessons: electronic readiness of human resources, lack of appropriate approach, limited facilities and infrastructure, especially lack of technology support and internet connection. The most important component is the readiness of human resources, including teachers and students, and parental support. School closures have a negative impact on student learning outcomes. Teachers, as a major component of formal education, have been encouraged to adapt to implementing learning that was previously based on face-to-face teaching but has since changed to online learning and such situations and crises can occur in the future.

Conclusion:

In light of the results of the current research, we can conclude with the
Following points:

1. The pandemic has had a variety of impacts on the education sector, including curricular delays, group and individual absences, and students forgetting previous

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lessons. It also has effects that include health, psychological, and economic aspects on teachers, students and the educational sector in general.

2. Online teaching has not been successful at all; teachers do not participate to share their lessons online because of the accessibility or lack of needs of online teaching, there are more than one problem, such as network access, high prices, of electronic tools, and the ministry not providing tools, such as laptop or smartphone ...etc. for teachers, and students. Therefore, teachers do not see online teaching is an alternative to classroom teaching.
3. The pandemic has caused teachers to be unable to conduct their study planning.
4. Despite their fear, anxiety, and stress over the pandemic, teachers prefer in-class teaching rather than online teaching.
5. The COVID-19 virus has also caused a decrease in the effectiveness of teachers and their teaching and science skills, reduced scientific and teaching skills of students, loss of collaborative work among students, and students who are unable to prepare well for exams. Do not forget that one of its advantages is that teachers and students are forced to learn new ways and platforms for learning, even if they are few, is online teaching and learning.

Recommendations:

1. Training and strengthening teachers in various teaching methods to find solutions in implementing the curriculum at any time, particularly during difficult times.
2. Opening courses for teachers and students to online teaching and online learning platforms, especially the method of teaching and distance learning, has increased with the spread of COVID-19.
3. Finding a solution to psychological problems such as anxiety and stress for teachers to deal with future crises and epidemics.
4. Find a suitable solution for practical lessons during distance learning.

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