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The Challenges Facing Primary School Students in Jordan in Learning Math online During the Coronavirus Crisis

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ABSTRACT

This study aimed to explore the challenges facing primary school students in Jordan in learning math online during the Coronavirus crisis. Thus, a descriptive analytical approach is adopted. A questionnaire was developed. It sheds a light on four types of challenges (i.e. educational¸ and psychological challenges, assessment-related challenges and IT-related challenges). The researcher selected a purposive sample consisting from 300 6th grade students. Those students were selected from 10 primary schools in Amman, Jordan. Questionnaire forms were passed to them in an electronic manner. 287 questionnaire forms were retrieved and considered valid for analysis. The response rate is 95.66%. It was found that 61%30 of the respondents have low satisfaction with learning math online during the Coronavirus crisis. The researcher concluded that the severity of the challenges facing primary school students in Jordan in learning math online during the Coronavirus crisis is high in all the areas jointly and separately. He recommends providing teachers and students in public and private schools with access to well-known electronic libraries and databases.

Keywords: Challenges, online learning, primary school students, Jordan, Coronavirus crisis.

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1. Introduction

The Coronavirus crisis started in Wuhan, China in December, 2019. It refers to the spread of COVID 19 virus worldwide. This virus is a respiratory disease. It may be transmitted through inhalation. The symptoms of this virus include: fever, cough, breathlessness, malaise, sore throat, fatigue and etc… They are mild for most people. However, this virus may be life threatening for healthy elderly. It may be life threatening for the elderly with comorbidities. The fatality rate of the latter virus ranges between (2% - 3%) (Singhal, 2020).

During the academic year (2019/2020), Jordan suffered from a global health crisis named (the Coronavirus crisis). Due to the seriousness of this crisis, the Jordanian government decided to take several measures to handle this crisis. Such measures include: educational measures. For instance, the Jordanian Ministry of Education and the Ministry of Higher Education and Scientific Research decided to deliver school and university education online. That was decided to protect the students' health and prevent the spread of the virus. Regarding school education, it was delivered through using an online platform called (Darsak) and TV channels (The UN Children's Fund, 2020). Thus, school students in Jordan were examined and assessed through using online assessment methods and exams.

Online education refers to the education that is delivered entirely through using the internet (Nguyen, 2015). The Jordanian government decided to shift to online learning during the Coronavirus crisis due to the benefits offered by such education. For instance, online learning offer flexibility learning opportunities. Flexibility learning opportunities mean that one can learn at any time and place without having to leave home. They shall facilitate the learning process for the ones living in remote areas and the ones suffering from physical health problems without leaving home (Nguyen, 2015; Adedoyin and Soykan, 2020). In addition, online education facilitates the process of searching for information and enables students to find information fast. It contributes to developing students' IT skills which are needed for having a successful career in the future. It allows teachers to use a variety of teaching styles and strategies. It allows teachers to record lessons. Thus, students can re-play the lesson video to understand complex information (Graham, 2019)

Online education allows teachers to upload and distribute academic material easy and fast. It turns the students into active learners who search for knowledge by themselves. It turns the teachers into facilitators of knowledge rather than transmitters for it (Graham, 2019). It contributes to making learning enjoyable and fun and organizing the information and the academic material. Thus, it improves students' academic achievement. It provides students with many exercises and that's needed in math course. It allows student to study independently without relying fully on the teacher. Thus, it allows students to improve their learning skills. It allows students to choose the electronic features and instruments that fit with their learning style (Luaran et al., 2013)

Despite that advantages of online education, there are various challenges facing the students who learn online. Such challenges include challenges related to planning, implementation of plans and policies and assessment (Toquero, 2020) According to

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Sarvestani et al. (2019), the challenges associated with online learning include: educational, administrative, organizational, psychological challenges and challenges related to infrastructure, assessment, communication and support. For instance, some online teachers don't provide students with adequate attention. In addition, students and teachers -in some online learning programs- aren't provided with adequate training courses about the way of using the e-learning platform (Sarvestani et al., 2019).

In some online educational programs, there may be poor coordination between the administration and the staff in school. The e-learning platform being used may be ineffective in some programs. Online learners may suffer from low internet speed and disconnection of the internet while attending class. They may suffer from lack of access to the library resources and databases. They may suffer from the instructors' poor assessment skills in an online learning environment. They may suffer from social isolation which increase the probabilities of suffering from depression, stress, anxiety and other mental disorders. They suffer from the absence of face-to-face communication and interaction (Sarvestani et al., 2019). They suffer from technical problems. They have concerns about the security and confidentiality of data (Hamzeh, 2011). Some online students suffer from the teachers' incapability to design e-content in a professional manner (Bani Yaseen and Melhem, 2011).

It has been suggested that students' attitudes shall affect their academic achievement (Al- Khayat, 2017). In addition, the effectiveness of online learning is still considered not completely clear (Nguyen, 2015). Thus, it is very necessary to conduct studies about students' attitudes towards such education and the challenges associated with such education. Conducting such studies is even more important in developing countries. That is because such countries are highly in need for improving their educational systems and the learning outcomes of their students. Thus, the researcher of the present study investigated the challenges facing primary school students in Jordan in learning math online during the Coronavirus crisis. He targeted the math course because it's considered the most difficult course for primary school students.

2. The Study's Objectives

The present study investigated the extent of satisfaction of primary school students in Jordan with learning math online during the Coronavirus crisis. It investigated the challenges facing primary school students in Jordan in learning math online during the Coronavirus crisis.

3. The Study's Questions

This study aimed to answer the following question:

Q.1. What is the extent of satisfaction of primary school students in Jordan with learning math online during the Coronavirus crisis?

Q.2. What are the challenges facing primary school students in Jordan in learning math online during the Coronavirus crisis?

4. Significance of the Study

The present study is significant because it is the first study that aims at exploring the challenges associated with learning math online during the Coronavirus crisis in Jordan. It is significant because there aren't many studies that aim to explore the

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challenges associated with online learning during the Coronavirus crisis in the Arab countries. It is significant because it provides researchers with an original instrument that targets several types of challenges (i.e. educational¸ and psychological challenges, assessment-related challenges and IT-related challenges). It is significant because it provides the Jordanian Ministry of Education with the results that can be used for improving the quality of online math education.

5. Definitions

5.1. *Theoretical* definitions:

-Online learning: It refers to the process of learning through using the internet (Nguyen, 2015

-Coronavirus crisis: This crisis refers to the spread of COVID 19 virus worldwide. This virus is a respiratory disease. It may lead to suffering from severe pneumonia. It emerged for the first time in in Wuhan, China in December, 2019. It may be transmitted through inhalation. It may be transmitted through having a contact with infected droplets. The incubation period of this virus ranges between (14-2) days. The symptoms of this virus include: fever, cough, breathlessness, malaise, sore throat, fatigue and etc… They are mild for most people. However, this virus may be life threatening for healthy elderly. It may be life threatening for the elderly with comorbidities. In fact, it may progress into acute respiratory distress syndrome (ARDS), pneumonia, and multi organ dysfunction. The fatality rate of the latter virus ranges between (2% - 3%) (Singhal, 2020).

5.2. Operation definitions:

-Online learning: It refers to learning math online by primary school students during the Coronavirus crisis in Jordan.

-Challenges: This term refers to the challenges facing primary school students in Jordan in learning math online during the Coronavirus crisis.

6. The Study's Limits

The limits are shown below:

-Temporal limits: This study was conducted during the second semester of the academic year (2019/2020).

-Spatial limits: This study was conducted in 10 primary schools in Amman

-Human limits: This study targets the primary school students who were learning math online during the Coronavirus crisis in Jordan.

-Thematic limits: This study sheds a light on the challenges facing primary school students in Jordan in learning math online during the Coronavirus crisis.

7. The Study's Limitations

The results of this study can't be generalized because they are limited to the study's instrument, sample, population and temporal and spatial limits

8. Theoretical framework

According to Kim and Shih (2003), there are assessment-related challenges associated with online learning. For instance, students can't be monitored while taking exams at home (Kim and Shih, 2003). According to Andersson (2008), there are financial challenges associated with online learning. Such financial challenges include: the high

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costs of technologies, and tuitions. They include: the high costs of designing e-books (Andersson, 2008).

Other challenges may include the inadequacy of training courses provided for teachers and other staff. Other challenges include challenges related to managing knowledge by the educational institution. They include: technical challenges and challenges in making the interface design and the curricula design. They include challenges in designing activities and choosing and using the right instructional strategy that fits with the content. They include: the lack of motivation among some student to learn in an online learning environment. They include the lack of motivation among some teachers to teach in an online learning environment (Andersson, 2008).

Other challenges include: having poor confidence among some teachers and students in their IT skills. They include choosing an assessment strategy that doesn't fit with the content of the curriculum. They include providing inadequate support to students by the administration and the staff of the educational institution. It should be noted that such support affect the pass rate of students in the course (Andersson, 2008).

According to Attri (2012), in some online educational program, the academic material may not be capable of meeting the academic needs of students. Sometimes, the individual differences between online learners aren't taken into consideration by teachers. In some online educational programs, the electronic material isn't rich with multimedia-based content. Some students in such programs may have low confidence about their learning and IT capabilities. Furthermore, the online learning process can get disrupted due to having interaction with relatives or family members while being at home. In online education, many students may not receive feedback or scores on their assignments or projects. That may be attributed to a problem in delivery or the overload of the teacher. In this case, those students shall be forced to perform self-assessment practices (Attri, 2012).

In online education, the instructor-student communication opportunities shall be scarce. For instance, weeks or days may pass without having any the communication between instructor and his student. However, the student who don't communicate with his teacher may be having poor self-assessment skills. Such lack of communication shall hinder the student from identifying the gaps in his knowledge or acquired skills. It shall have a negative influence on the quality of the provided education. It may be attributed to the fact that the teacher isn't capable to respond quickly to numerous messages sent by a great number of students. The teacher may receive hundreds of messages (Attri, 2012).

Sometimes, the online learners aren't provided with adequate services. The services that must be provided for online learners include: online admission services and online access to online libraries. The online learners may suffer from difficulties in contacting the administrative and academic staff, and accessing the electronic library of school. Online education has negative psychological impacts. For instance, it promote depression and frustration among students. It also reduces the learners' self-confidence level. That is attributed to the social isolation it causes (Attri, 2012).

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Some online learners aren't provided with training on the way of using ICTs. The absence of such training shall hinder those learners from managing their own learning process efficiently. Some people are not literate (incapable to read and write). They won't be capable to learn online. That's because learning online requires being capable to use the e-learning platform and reading surfing website. In addition, it's suggested that online education negatively affects the achievement of students. That may be attributed to the social isolation associated with such education. Furthermore, some teachers in online educational programs don't customize the academic material in accordance with the needs of each student (Attri, 2012).

Students' satisfaction with the online educational programs and enjoyment in such programs are affected by their IT skills level. In such programs, students are deprived from having multisensory experiences. Such deprivation has a negative influence on learning outcomes. Students in online educational programs may lose interest in learning and acquiring knowledge due to having a delay in the asynchronous replies. In such programs, the opportunities that students have to engage in conversations with their class mates are scarce (Wang, 2014).

According to Gillett-Swan (2017), the challenges associated with online learning include: facing technical problems. They include: the poor IT competency level of the academic staff. Online learning may make learners feel isolated due to the absence of face to face interaction. Such isolation may make learners experience much anxiety. Another challenge associated with online learning is represented in the difficulty in finding an effective e-platform that encourage students to learn (Gillett-Swan, 2017)

According to Sarvestani et al. (2019), the challenges associated with online learning include: educational, administrative, organizational, psychological challenges and challenges related to infrastructure, assessment, communication and support. Regarding the educational challenges they include: lack of knowledge about the students' learning needs and providing inadequate attention to students by the instructors. They include: having too many assignments and the high expectations of the instructors. Regarding the administrative challenges, they include the poor coordination between the administration and the staff. There may be interference between the working hours and the class hours. Regarding the organizational challenges, they include using ineffective e-learning platform and the poor IT skills of instructors. They include: the inadequacy of the training courses given to teachers and students about online learning (Sarvestani et al., 2019)

Regarding the infrastructure-related challenges, they include: the low internet speed, not having access to some data-bases, not having access to the library resources, and having internet disconnection. Regarding the assessment-related challenges, they include: instructors' poor assessment skills in an online learning environment. Regarding the psychological challenges, they include: a rise in the probabilities of suffering from mental problems and disorders. They include: rise of students' stress levels and having negative perceptions by students for online learning. Regarding the support-related challenges, they include: lack of psychological and financial support provided by educational institutions for students. Regarding the communication-related challenges, they include: the absence of face-to-face communication and

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interaction. They include: the inadequacy of the student-instructor interaction (Sarvestani et al., 2019).

Dahadhah and Al-Hamoori (2020) add that there are challenges associated with online assessment. For instance, such assessment doesn't allow educators to identify the exact learning needs of their students. It doesn't enable educators to assess the skills of students. It doesn't offer much security for students and instructors. That may be attributed to the fact that the scores of students may be hacked by hackers (Dahadhah and Al-Hamoori, 2020)

9. **Empirical Studies**

El-Hersh et al. (2010) investigated the e-learning-related challenges that face secondary school teachers in Al-Kurrah District in Irbid, Jordan. They used a questionnaire. They used a thirty-six item questionnaire. They selected a random sample that consists from 105 teachers. They found that the severity of such challenges is high. The teacher-related challenges include: teachers' poor motivation, having teachers with low English language competency, having teachers with poor IT skills, and difficulty in tracking the students' achievement and progress. Teachers don't have adequate knowledge about the teaching methods used through the e-learning platform (El-Hersh et al., 2010)

The administration-related challenges include: refrainment of the administration from providing teachers with training courses to develop their IT skills. They include: refrainment of the administration from providing the teachers who master the use of e-learning platform with incentives. As for the challenges related to IT infrastructure and resources, they include: facing frequent internet disconnection, the internet is slow, and the scarcity of e-material (El-Hersh et al., 2010).

As for the student-related challenges, they include: suffering from social isolation. Some students don't have internet at home. Some students gets distracted with using entertainment websites. Some students have poor computer skills. E-learning shall deprive students from interacting face to face with their teachers. Some students don't have the desire to using e-learning platforms. E-learning doesn't develop students in emotional aspects. It doesn't meet the learning needs of students. Some students believe that using e-learning platforms isn't associated with good learning outcomes (El-Hersh et al., 2010)

Soman and Hamzeh (2011) investigated the challenges associated with using e-learning platform called EDUWAVE from the perspective public school teachers in Amman. 90 public school teachers were sampled from 10 schools in Amman. The researchers used a questionnaire. They found that the Ministry of Education in Jordan doesn't provide teachers adequate training about the way of using this platform. The goals of the platform aren't mentioned clearly on the page. When there is a technical problem, teachers can easily communicate with IT specialists. The platform is developed in a regular manner. Surfing pages on the platform is easy. The platform offers much security.

Bani Yaseen and Melhem (2011) investigated the e-learning-related challenges that face teachers in the schools affiliated with Irbid Al-Ola directorate of education. They selected a random sample consisting from 186 female and male teachers from the

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latter schools. They used a questionnaire that consists from 28 items. They found that the severity of such challenges is high. Such challenges include: poor IT infrastructure, having inadequate resources, and the teachers' incapability to design e-content. They include: having poor awareness in society about the significance of e-learning and the inadequacy of training provided for teachers. Some courses require delivering face-to-face education. Some teachers and students have poor English language competency. There are risks related to privacy and confidentiality of data. Some teachers and students have poor IT skills. There is a need for making changes to the education system

Luaran et al. (2013) investigated the perception of students in Shah Alam, Selangor, Malaysia for e-learning. The sample consists from 45 male and female students. Those students were selected from 3 schools. The researchers used a questionnaire and the SPSS software. They found that e-learning offers flexible learning opportunism in terms of time and space. In addition, e-learning improves students' skills in using internet and technological devices. It makes the academic material more organized and turns learning into a fun and enjoyable process. It develops the students' learning skills. However, there are challenges associated with e-learning. For instance, the cost of the technological devices is high. There are also technical problems associated with e-learning. In addition, the students who don't have internet at home shall be forced to go to internet cafés to use the e-learning platform.

10. Methodology

10.1. *Approach*

The researcher adopted a descriptive analytical approach.

10.2. Population and Sample

The population involves all the primary school students in Jordan who learnt math online during the Coronavirus crisis. The researcher selected a purposive sample consisting from 300 6th grade students. Those students were selected from 10 primary schools in Amman, Jordan. Questionnaire forms were passed to them in an electronic manner. 287 questionnaire forms were retrieved and considered valid for analysis. The response rate is 95.66%. Table (1) shows the distribution of the sample in accordance with gender

Table (1): The distribution of the sample in accordance with gender

Variable	Category	Frequency	Percentage%
Gender	Male	143	49.825
	Female	144	50.17

N=287

49.82% of the respondents are males and 50.17% of the respondents are females.

10.3. Instrument:

The researcher drafted a questionnaire based on several references along with adopting the five point Likert scale. This scale consists from the following rating categories: (strongly agree, agree, neutral, disagree and strongly disagree). The questionnaire consists from five parts and a cover page. The cover page includes the title of the research and the name of the researcher. It collects data about gender.

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The first part of the questionnaire collects data about the educational challenges. It was developed based on the works of Sarvestani et al. (2019), Andersson (2008). The second part of the questionnaire collects data about the assessment-related challenges. It was developed based on the works of Sarvestani et al. (2019), Kim and Shih (2003), Andersson (2008); and Dahadhah and Al-Hamoori (2020). The third part of the questionnaire collects data about the IT-related challenges. It was developed based on the works of El-Hersh et al. (2010); Sarvestani et al. (2019); Andersson (2008); Melhem (2011); Soman and Hamzeh (2011); and Gillett-Swan (2017). The fourth part of the questionnaire collects data about the psychological challenges. It was developed based on the works of Attri (2012); Sarvestani et al. (2019); El-Hersh et al. (2010). The fifth part of the questionnaire collects data about the extent of satisfaction with learning math online during this crisis.

10.4. Validity of the Questionnaire

The initial version of the questionnaire was passed to two instructors. These instructors work at a university in Amman. They are specialized in teaching methods and have a PhD degree. They were asked to evaluate the questionnaire in terms of language, ability to meet the goals, relevancy and clarity. They added that the questionnaire is clear and capable of meeting the intended goals. One of the instructor added that there isn't any need for making any deletion nor change to the instrument. However, the other instructor recommended redrafting a statement and adding a specific statement. Thus, changes were made and the final version of the questionnaire was drafted. The questionnaire was passed in Arabic language to the members of the sample and the two instructors. It was translated into English language to be displayed in the published version of this study.

10.5. Reliability of the Questionnaire

The Cronbach alpha values are calculated for each area. They are displayed in the table shown below:

Table (2): Cronbach alpha values for each area

No.	Area	Cronbach alpha
1.	The educational challenges	0.81
2.	The assessment-related challenges	0.73
3.	IT-related challenges	0.79
4.	The psychological challenges	0.87
	Total	0.80

The overall value is 0.80. All the values in the table above indicate that the questionnaire is reliable, because they are greater than 0.70 as it's suggested by Salehi & Farhang (2019).

10.6. Data collection analysis

To analyse the data collected through the instrument, the researcher used SPSS program. He also calculated standard deviations. He calculated the relevant means. He

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calculated frequencies, percentages and Cronbach alpha coefficient. He classified the means based on specific criteria. Such criteria are shown below:

Table (3): The criteria that are used by the researcher for classifying means

Range	Level	Attitude
2.33 or less	Low	Negative
2.34-3.66	Moderate	Neutral
3.67 or more	High	Positive

*Source: Al-Amery (2020)

Regarding the five point Likert scale, it consists from five (5) rating categories that are shown below.

Table (4): The categories and scores of the five point Likert scale

Category	Strongly agree	Agree	Moderate	Disagree	Strongly disagree
The score it represents	5	4	3	2	1

11. Results and Discussion

11.1. Results and discussion related to the first question

Q.1. What is the extent of satisfaction of primary school students in Jordan with learning math online during the Coronavirus crisis?

Percentages and frequencies are calculated to answer this question

Table (5): Percentages and frequencies about the extent of satisfaction of primary school students in Jordan with learning math online during the Coronavirus crisis

Extent of satisfaction with learning math online during the Coronavirus crisis?	Frequencies	Percentage
High satisfaction	35	12.19
Moderate satisfaction	76	26.48
Low satisfaction	176	61.32

N=287

Based on table (5), 12.19% of the of the respondents show high satisfaction and 26.48% of the respondents show moderate satisfaction. However, 61.32% of the respondents have low satisfaction with learning math online during the Coronavirus crisis. The latter percentage represents more than half of the sample. This indicates that more studies must be conducted to explore the reasons behind such low satisfaction. It indicates that Jordanian math teachers must exert more effort to improve the quality of the math education delivered online.

11.2. Results and discussion related to the second question

Q.2. What are the challenges facing primary school students in Jordan in learning math online during the Coronavirus crisis?

To identify the severity of the types of the challenges, the means and standard deviations of the study's areas are calculated and shown in table (6).

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Table (6): The means and standard deviations of the study's areas

No.	Area	Mean	Std.	Level	Rank
1.	The educational challenges	4.19	0.25	High	3
2.	The assessment-related challenges	3.99	0.31	High	4
3.	IT-related challenges	4.91	0.35	High	1
4.	The psychological challenges	4.50	0.39	High	2
	Overall	4.39	0.32	High	

Based on table (6), the severity of the challenges facing primary school students in Jordan in learning math online during the Coronavirus crisis is high, because the overall mean is 4.39. The mean of the (IT-related challenges) is 4.91 which is high and ranked first. The mean of the (psychological challenges) is 4.50 which is high and ranked second. The mean of the (educational challenges) is 4.18 which is high and ranked third. The mean of the (assessment-related challenges) is 3.99 which is high and ranked fourth. Thus, the severity of each type of challenge is high. That may be attributed to the fact that the Ministry of Education didn't face a similar crisis before. Thus, the latter ministry lacks experiences in dealing with global health crisis. It also lack experiences in delivering online education. Therefore, more measures must be carried out by the Ministry of Education in Jordan to improve the quality of online school education in Jordan.

The researcher presented below the results related to each type of challenge in details:

First: Educational challenges

Table (7): The educational challenges facing primary school students in Jordan in learning math online during the Coronavirus crisis

No.	Statement	Mean	Std.	Level	Rank
In the online learning environment,					
1.	math teachers lack knowledge about the students' learning needs	4.91	0.27	High	1
2.	math teachers provide students with inadequate attention	4.76	0.18	High	3
3.	math teachers don't use the right instructional strategies that fit with the content	2.25	0.32	Low	4
4.	the individual differences between students aren't taken into consideration by the math teachers	4.85	0.25	High	2
	Overall	4.19	0.25	High	

***Source:** Sarvestani et al. (2019), Andersson (2008).

Based on the table above, the severity of the educational challenges facing primary school students in Jordan in learning math online during the Coronavirus crisis is high, because the overall mean is 4.19. It was found that the math teachers in Jordanian primary school lack knowledge about the students' learning needs while delivering online education. That's because the mean of statement (1) is 4.91 which is

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high and ranked first. The latter result may be attributed to the lack of attention provided by math teachers for students. It may be attributed to the inadequate interaction between teachers and students in the online learning environment

The researcher found that the individual differences between students – in the online learning environment- aren't taken into consideration by the math teacher. That's because the mean of statement (4) is 4.85 which is high and ranked second. The latter result may be attributed to the fact that taking such differences into consideration requires exerting more effort by the teacher and dedicating more time for lesson preparation and planning. To illustrate more, taking such differences into consideration requires making several worksheets and exams that fit with the level of each student.

Second: Assessment-related challenges

Table (8): The assessment-related challenges facing primary school students in Jordan in learning math online during the Coronavirus crisis

No.	Statement	Mean	Std.	Level	Rank
In the online learning environment,					
1.	I found that the math teacher has poor online assessment skills	2.17	0.20	Low	7
2.	the scores on the online exam system aren't reliable because students can't be monitored while taking the exam	4.97	0.14	High	1
3.	the math teacher chooses assessment strategies that don't fit with the content of the curriculum	2.31	0.38	Low	6
4.	online assessment doesn't allow the math teacher to identify the exact learning needs of each student.	4.63	0.56	High	4
5.	online assessment doesn't offer much security	4.70	0.27	High	2
6.	online math assessment doesn't enable the math teacher to assess the skills of students accurately	4.48	0.46	High	5
7.	The math teacher sometimes doesn't provide me with feedback on my online assignment	4.67	0.18	High	3
	Overall	3.99	0.31	High	

***Source:** Sarvestani et al. (2019), Kim and Shih (2003), Andersson (2008); and Dahadhah and Al-Hamoori (2020)

Based on the table above, the severity of the assessment-related challenges facing primary school students in Jordan in learning math online during the Coronavirus crisis is high, because the overall mean is 3.99. The researcher found that the scores on the online exam system aren't reliable because students can't be monitored while

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taking the exam. That's because the mean of statement (2) is 4.97 which is high and ranked first. The latter result may be attributed to the fact that anyone can take the online exam on behalf of the student. Hence, the scores on paper-based exams are more reliable than the scores on online exams.

The researcher concluded that online assessment doesn't offer much security. That's because the mean of statement (5) is 4.70 which is high and ranked second. The latter result may be attributed to the fact that a hacker may hack into the system and damage the data stored after taking the exam. The researcher concluded that math teachers sometimes don't provide students with feedback on their online assignments. That's because the mean of statement (7) is 4.67 which is high and ranked third. The latter result may be attributed to facing difficulty by some teachers in using the platform for delivering feedback. It may be attributed to the overload of some math teachers

Third: IT-related challenges

Table (9): The IT-related challenges facing primary school students in Jordan in learning math online during the Coronavirus crisis in terms

No.	Statement	Mean	Std.	Level	Rank
	In the online learning environment,				
1.	I suffer from many internet disconnection	2.53	0.81	Moderate	11
2.	The internet is slow	2.62	0.37	Moderate	9
3.	I don't have access to the resources of the school library which hinders me from expanding my mathematical knowledge	4.88	0.10	High	2
4.	I don't have access to many databases which hinders me from expanding my mathematical knowledge	4.58	0.42	High	5
5.	Many students suffer from poor IT skills	4.37	0.13	High	8
6.	The math teacher suffers from poor IT skills	4.62	0.48	High	4
7.	I get distracted sometimes while learning math due to surfing entertainment websites and playing games online.	4.38	0.47	High	7
8.	I have concerns about security and confidentiality of data	4.41	0.50	High	6
9.	The math teacher is incapable of designing e-material in a professional manner	4.75	0.11	High	3
10.	The country has a poor IT infrastructure	4.98	0.29	High	1

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11.	I find the e-learning platform difficult to use	2.30	0.38	Low	12
12.	I face technical problems while using the e-learning platform	2.58	0.24	Moderate	10
	Overall	3.91	0.35	High	

***Source:** El-Hersh et al. (2010), Sarvestani et al. (2019), Andersson (2008), Melhem (2011), Soman and Hamzeh (2011), and Gillett-Swan (2017).

Based on the table above, the severity of the IT-related challenges facing primary school students in Jordan in learning math online during the Coronavirus crisis is high, because the overall mean is 3.91. The researcher concluded that Jordan has a poor IT infrastructure. That's because the mean of statement (10) is 4.98 which is high and ranked first. The latter result is attributed to the fact that Jordan is a developing country that suffers from the scarcity of resources and low governmental budget.

The researcher found that students don't have access to the resources of their school library which hinders them from expanding their mathematical knowledge. That's because the mean of statement (3) is 4.88 which is high and ranked second. The latter result is attributed to the fact that most of the resources in the school libraries are in paper-based form rather than electronic form. Thus, uploading such resources to the web shall be difficult and requires much time and effort. The researcher found that math teachers in primary Jordanian schools are incapable of designing e-material in a professional manner. That's because the mean of statement (9) is 4.75 which is high and ranked third. The latter result may be attributed to the poor quality of the training provided for teachers.

Fourth: The psychological challenges

Table (10): The psychological challenges facing primary school students in Jordan in learning math online during the Coronavirus crisis in terms

No.	Statement	Mean	Std.	Level	Rank
1.	Online learning leads to a rise in the probabilities of suffering from mental problems and disorders.	4.56	0.24	High	3
2.	Online math learning leads to a rise in the students' stress and anxiety levels	4.82	0.36	High	1
3.	The math teacher isn't motivated to deliver online education.	4.34	0.17	High	5
4.	There isn't adequate psychological support provided for students by the school	4.64	0.52	High	2
5.	Online math learning promotes frustration among students	4.19	0.49	High	6
6.	Online learning doesn't contribute to the development of students in	4.47	0.61	High	4

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	emotional aspects.				
	Overall	4.50	0.39	High	

***Source:** Attri (2012), Sarvestani et al. (2019), El-Hersh et al. (2010)

Based on the table above, the severity of the psychological challenges facing primary school students in Jordan in learning math online during the Coronavirus crisis is high, because the overall mean is 4.50. The researcher found that online math learning increases the stress and anxiety levels of students. That's because the mean of statement (2) is 4.82 which is high and ranked first. The latter result may be attributed to the fact that online learners suffer from social isolation. To illustrate more, the absence of human interaction in online educational programs shall negatively affect students in psychological areas.

The researcher found that there isn't adequate psychological support provided for students by the school. That's because the mean of statement (4) is 4.64 which is high and ranked second. The latter result may be attributed to the fact that providing such support is costly and requires having much coordination between counsellors and administrative staff in schools. The researcher found that online learning leads to a rise in the probabilities of suffering from mental problems and disorders. That's because the mean of statement (1) is 4.56 which is high and ranked third. The latter result may be attributed to the absence of face-to-face social activities in online education during the Coronavirus crisis.

12. Conclusion

It was found that 61.30% of the respondents have low satisfaction with learning math online during the Coronavirus crisis. The researcher concluded that the severity of the challenges facing primary school students in Jordan in learning math online during the Coronavirus crisis is high in all the areas jointly and separately. To be specific, the severity of the educational¸ and psychological challenges, assessment-related challenges and IT-related challenges is high.

Regarding the educational challenges, they include: teachers lack knowledge about the students' learning needs. They include: the refrainment of the math teachers from taking the individual differences between students to consideration. Regarding the assessment-related challenges, the scores on the online exam system aren't reliable because students can't be monitored while taking the exam. In addition, online math assessment doesn't offer much security. Math teachers sometimes don't provide students with feedback on their online assignment. Regarding the IT-related challenges, they include: the country's poor IT infrastructure and the absence of access to the resources of the school library. There are also psychological challenges. For instance, online learning leads to a rise in stress and anxiety levels of students. It increases the probabilities of suffering from mental problems and disorders.

13. Recommendation

The researcher recommends:

a) Providing teachers and students in public and private schools with training courses that improve their IT skills and ability to use e-learning platforms. Teachers and students should be provided with courses that improve their English language

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competency. Improving such competency shall lead to improving the ability to use the e-learning platform, surf websites and use databases

b) Providing more funds by the Jordanian Ministry of Education for the development of the e-learning platform

c) Developing teachers guides for delivering effective online education when facing any crisis

d) Providing teachers and students in public and private schools with access to well-known electronic libraries and databases.

e) Providing the students receiving online education in Jordan with financial and psychological support. That must be done due to having poor students who aren't capable of paying the costs of technological devices and internet.

f) Creating an IT department in each private and public school in Jordan.

g) Conducting studies about the perceptions of university students in Jordan for online education during the Coronavirus crisis.

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