Journal of the Association of Arab Universities for Research in Higher Education (مجلة اتحاد الجامعات العربية (للبحوث في التعليم العالي

Volume 43
Issue 1 *(JAARU-RHE) Vol. (43) – No. (1) – March 2023*

Article 16

2023

Difficulties facing teachers in teaching Mathematics to students with learning disabilities in light of Corona pandemic and proposed solutions from the teachers' point of view

Laial Mohammad Damrah
Arab Open University - Jordan, L_damrah@aou.edu.jo

Journal of the Association of Arab Universities for Higher Education Research (JAARU-RHE) Vol. (43) – No. (1) – March 2023

Contents lists available at: Digital Commons

مجلة اتحاد الجامعات العربية للبحوث في التعليم العالي

Journal of the Association of Arab Universities for Higher Education Research (JAARU-RHE)

Journal homepage: https://digitalcommons.aaru.edu.jo/jaaru_rhe/

Difficulties facing teachers in teaching Mathematics to students with learning disabilities in light of Corona pandemic and proposed solutions from the teachers' point of view

الصعوبات التي تواجه تدريس طلبة صعوبات التعلم في الرياضيات في ظل جائحة كورونا والحلول المقترحة لها من وجهة نظر معلمي صعوبات التعلم

Laila Damrah*
Arab Open University, Amman, Jordan
l_damrah@aou.edu.jo

ليلى ضمرة
الجامعة العربية المفتوحة، عمان، الأردن

Received: 06/10/ 2022 Accepted: 24/10/ 2022 Published: 15/03/ 2023

Abstract

The study aimed to reveal the difficulties facing teaching students with learning disabilities in Mathematics in light of Corona pandemic and proposed solutions to them from the point of view of their teachers. To achieve this goal, the analytical descriptive approach was used, the study tool (questionnaire) was distributed randomly on a sample of 58 teachers was chosen out of 123 (47% of the study population) from all resource rooms in 5 directorates in Amman (26 male and 97 female teachers) for the academic year 2020/2021 to respond to a questionnaire items. The result showed that the most problems facing the teachers of students with learning disabilities in Mathematics in the directorates of Amman during Corona pandemic were the loss of students with learning disabilities to face-to-face education that stimulates their energies, develops their skills, and takes into account their circumstances, their cognitive and skill abilities, the lack of special educational platforms for students with learning disabilities, and lack of availability of necessary portable devices for students who are unable to purchase them .

Key Words: Learning Disabilities, Math Disabilities, Corona Pandemic

المستخلص

هدفت الدراسة الكشف عن الصعوبات التي تواجه تعليم الطلاب ذوي صعوبات التعلم في الرياضيات في ظل جائحة كورونا والحلول المقترحة لهم من وجهة نظر معلميهم. ولتحقيق هذا الهدف، تم استخدام المنهج الوصفي التحليلي، وتكونت أداة الدراسة من استبانة تم توزيعها عشوائياً على عينة تكونت من 58 معلمًا من أصل 123 (47٪ من مجتمع الدراسة) من جميع غرف المصادر في 5 مديريات في عمان (26 مدرسًا و 97 معلمة) للعام الدراسي 2021/2020 للرد على عناصر الاستبيان. وأظهرت النتيجة أن المشكلات التي واجهت معلمي الطلاب ذوي صعوبات التعلم في الرياضيات في مديريات عمان خلال جائحة كورونا كانت عالية بشكل عام، ومن أهم تلك الصعوبات: فقدان الطلاب ذوي صعوبات التعلم للتعليم وجهًا لوجه الذي يحفز طاقاتهم ويطور مهاراتهم ويأخذ في الاعتبار ظروفهم وقدراتهم المعرفية والمهارية، وعدم وجود توجد منصات تعليمية خاصة للطلاب ذوي صعوبات التعلم، زعدم توفر الأجهزة المحمولة اللازمة للطلاب غير القادرين على شرائها.

كلمات مفتاحية: صعوبات التعلم، صعوبات تعلم الرياضيات، جائحة كورونا.

DOI: 10.36024/1248-043-001-016 P-ISSN: 1680-6549 E-ISSN: 2957-9783

* Corresponding author: *l_damrah@aou.edu.jo*

1. Introduction

The right to education is one of the fundamental human rights, as it is the main engine for the realization of all human rights, it is the impetus for the acceleration of the development and progress of nations.

The interest in education has increased after the spread of the Corona pandemic in most countries of the world and the students' dropping out of schools, the distance education system was adopted and teachers tended to train on remote teaching methods to achieve educational goals well, and all schools also sought to combat many problems such as social isolation, and low motivation students.

The Corona pandemic forced educational institutions, without exception, to switch to distance education and stop face-to-face education in schools and universities. 1.5 billion students in 188 countries around the world had to stay in their homes in early 2020 after closing schools and universities when the Corona pandemic caused a major disruption in education, this led to a temporary suspension, paralyzing the movement of education and stopping students from enrolling in their schools (Unesco,2020).

After distance education became a reality, various studies began evaluating the impact of this pandemic on the education sector and the extent to which students benefit from the distance education process for students (Affouneh & Salha,), teachers also feared about the decline in the level of students, especially students with disabilities, after the confinement of this pandemic and returning to the classroom (Basilaia & Kvavadze, 2020).

This study comes to identify the difficulties that mathematics teachers faced for students with disabilities during the Corona pandemic.

1.1 Research problem and its questions

The second semester of the 2019/2020 academic year witnessed a crisis that pervaded all countries of the world without exception, this crisis is the Corona pandemic, which imposed a new educational reality at all levels, and required a radical change in the environment and methods of education, which led to the transfer of students in a period of time. It did not exceed the week from a face-to-face learning pattern based on regular study and direct interaction between students and the elements of the educational situation to distance learning using e-learning techniques, which most teachers were not proficient in dealing with (Aldoghmi,2020), which led to the emergence of a number of challenges faced by teachers during the distance learning process, including technical problems related to the Internet, the effectiveness of the smart device or computer, and the lack of clarity of sound or image during the presentation of educational content (Alshehri,2020). Some people believe that the teacher should possess the skills to program distance education applications, and this contradicts the reality, as there are many ready-made programs prepared for the use of teachers and that they are required to choose the program and train to use it (Saqr, 2020).

As a result of Jordan's tendency to distance learning, like many countries of the world, to confront the suspension of studies in schools due to the pandemic that has hit the world, many challenges have emerged facing distance learners, including students with learning disabilities, and among these challenges is the lack of the necessary infrastructure for this type of education, in addition to the absence of direct communication between students with learning disabilities and the teachers, which is essential in teaching Mathematics, as it depends on the practical solution of many mathematical problems, and the use of many educational means to bring abstract concepts closer to these students. So, it seems important Identify the difficulties facing teaching students with learning disabilities in the light of Corona pandemic and the proposed solutions to them from the point of view of their teachers. More specifically, this study seeks to answer the following three questions:

1- What are the problems facing the teaching of students with learning

Journal of the Association of Arab Universities for Higher Education Research (JAARU-RHE) Vol. (43) – No. (1) –2023, 245-256 (DOI: 10.36024/1248-043-001-016)

disabilities in Mathematics in the directorates of Amman in during Corona pandemic from the point of view of teachers of students with learning disabilities?

2- Are there statistically significant differences at the level of ($\alpha \leq 0.05$) in the problems facing the teaching of students with learning disabilities in Mathematics in the directorates of Amman in the light of Corona pandemic from the point of view of teachers due to gender variables, number of years of experience in dealing with learning disabilities, and educational qualification?

3- What are the proposed solutions to these problems from the point of view of the teachers?

1.2 Significance of the Study

The scientific significance of this study derived from the following points:

- Describe the problems facing students with learning disabilities in Mathematics in the light of Corona pandemic, and the proposed solutions for them from the point of view of teachers.
- Shedding light on the quality of learning for children with learning disabilities in Mathematics, as well as happiness with this style of learning.
- Prioritizing learning challenges in Mathematics, as a substantial proportion of pupils suffer from weaknesses in this subject at various academic levels.

As for the practical importance of the study, it is represented on helping teachers understand their strengths and shortcomings, allowing them to improve their service provision for kids with learning disabilities.

1.3 Research objectives:

This study aims to achieve the following objectives:

- To identify the problems facing the teaching of students of learning disabilities in Mathematics in the light of Corona pandemic from the point of view of teachers their teachers.
- To identify the effect of gender and age as well as academic qualification, years of teaching experience of the teachers on the problems facing the teaching of students with learning disabilities in Mathematics in Amman during Corona pandemic from their point of view.
- To propose solutions to the problems faced by students with learning disabilities in Mathematics.

2. Literature review

According to The National Center for Learning Disabilities (NCLD), Learning disabilities are not the same as intellectual disabilities (formally known as mental retardations), sensory impairments (vision or hearing) or autism spectrum disorders. People with LD are average or above average intelligence, but still struggle to acquire skills that impact their performance in school, at home, in the community and in the workplace. Learning disabilities are life long, and the sooner they are recognized and identified the sooner steps can be taken to overcome the challenges they present (NCLD, 2014).

There are several classifications of learning disabilities, but the most common is the Kirk & Chalfant classification, which divided them into developmental and academic learning disabilities, which include cognitive difficulties, such as problem solving, attention, focus, memory difficulties, concept formation, integration between the senses, and language difficulties, such as oral language and auditory thinking, Auditory reception, visual and movement difficulties, performance of great motor skills that reflect muscle coordination and performance of fine motor skills. The second difficulty is a clear disorder in learning to read, write, and spell or arithmetic, (Kirk & Chalfant, 1984).

Reading, Mathematics, and written expression are the most common academic deficiencies for children with learning disabilities. Some youngsters suffer only one of the three academic areas, while others suffer from all the three, (Lerner, 2000).

The term disability in learning Mathematics is called Mathematics Learning Disabilities (MLD). Some researchers call MLD as dyscalculia, while the American Psychiatric Association (2018) defined dyscalculia as a math learning condition that affects a person's ability to understand number ideas, make accurate math calculations, reason and problem solving, and perform other basic math abilities. Dyscalculia is often known as "number dyslexia" or "math dyslexia". Geary (2004) describes dyscalculia as a difficulty in numerical and arithmetic caused by brain injury. Geary uses this term to describe a population of 5 - 8% of school-age children who have a cognitive abnormality that affects their ability to study concepts or procedures in one or more areas of Mathematics. In general, dyscalculia is an umbrella term used for various difficulties in learning Mathematics, such as developmental dyscalculia, mathematical difficulty, difficulty learning numerical concepts, and difficulty in learning the concept of numbers.

Bryant & Hamill (2000) identified characteristics that students with math weaknesses displayed. The top characteristic was word problem difficulty followed by multi-step problem solving. The third characteristic is difficulty with the language of math which includes symbols and vocabulary. According to Geary (2004), 5-8% of school age children have some type of Mathematics LD with the discrepancy approach the most common diagnostic method.

The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition DSM-5 (2013) which is used by mental health professionals to determine diagnoses. Lists the following two Mathematics-related symptoms in their diagnostic criteria of Specific learning disorder (SLD):

- Difficulties mastering number sense, number facts, or calculations (e.g., has poor understanding of numbers, their magnitude, and relationships; counts on fingers to add single-digit numbers instead of recalling the math facts as peers do; gets lost in the midst of arithmetic computation and may switch procedures).
- Difficulties with mathematical reasoning (e.g., has severe difficulty applying mathematical concepts, facts, or procedures to solve quantitative problems).

With the emergence of the Corona virus, educational institutions in most countries of the world decided to suspend their schools and move to a distance education system, and they applied distance learning programs and developed them until they became approved and official programs, but these educational programs may not be suitable for all students, especially students with learning disabilities who are being educated in public schools in Jordan.

Pre-COVID, students with disabilities underperformed in Mathematics compared to their nondisabled peers, affecting student opportunity (Wei et al., 2013). As students with disabilities already have diminished access to conceptual and challenging Mathematics (e.g. Jackson & Neel, 2006), we are particularly concerned with how special educators engage students with disabilities in the rigorous, problem-based Mathematics of the Common Core State Standards of Mathematics (CCSSM, 2010) during the pandemic. Inequities in opportunities to learn Mathematics are likely to become more pronounced during Emergency Remote Teaching (ERT).

Though some preliminary research has begun to document the challenges facing special educators during this time (Schuck & Lambert, 2020), little is known about how special educators are adapting their teaching in the area of Mathematics.

(Schuck & Lambert, 2020) presented a case study of the experiences of a special educator named Ms. Montes (pseudonym teaching standards-based Mathematics during Emergency Remote Teaching (ERT) during spring 2020. Ms. Montes was interviewed twice during this

Journal of the Association of Arab Universities for Higher Education Research (JAARU-RHE) Vol. (43) – No. (1) –2023, 245-256 (DOI: 10.36024/1248-043-001-016)

period, and data analysed through inductive thematic analysis. Pre COVID, Ms. Montes provided her students daily opportunities to tackle challenging mathematical problems and taught self-regulation strategies for students to better understand themselves as learners. After the shift to ERT, Ms. Montes described ‘‘the wall between us’’ as various barriers that made teaching Mathematics online far more challenging. Challenges included supporting students with productive struggle when not physically present with them and supporting student self-regulation during mathematical problem-solving. Supporting students with disabilities to learn Mathematics during ERT and distance learning will require considering emotional and affective dimensions of learning. Coaching students and families in self-regulation strategies could support student engagement in mathematical problem-solving in online learning.

In an interview study of twenty-four general education teachers in the U.K, teachers discussed feelings of uncertainty and anxiety about their student’s safety and access to resources, as well as concerns about grading (Kim, Asbury, 2020).

(Livari et al.2020) documented the experiences of special education teachers in India and a widening digital divide based not only on disability but also on the socioeconomic class of students.

(Wen et al., 2020) conducted semi-structured interviews with 12 teachers who taught students with SLDs in grades five to eight. They found that participants used math e-learning tools that were not designed specifically for students with SLDs. Participants had difficulty using these tools because of text-intensive user interfaces, insufficient feedback about student performance, inability to adjust difficulty levels, and problems with setup and maintenance. Participants also needed assistive technology for their students, but they had challenges in getting and using it. Out of these findings, we distilled design implications to help shape the design of more inclusive and effective e-learning tools.

To conclude, previous studies have indicated various forms of challenges that students face in learning Mathematics, as studies have shown; these challenges negatively affect achievement and adaptation school, and carrying out daily living activities. What distinguishes this study from other studies is that it examined the difficulties facing students with learning disabilities in Jordan in the light of Corona pandemic and proposed solutions to them from the point of view of their teachers.

(Ghzowi & Alotiebi,2021) conducted a study aimed to identify the challenges of distance learning during the Corona pandemic for students with learning difficulties from the point of view of their teachers in Makkah Al-Mukarramah. To achieve the objectives of the study, the researchers used quantitative method to analyze the data. The study included a sample consisted of (43) teachers of students with learning difficulties in Makkah Al-Mukarramah who were chosen randomly. A questionnaire was created and distributed electronically and consisted of (6) dimensions of the challenges of distance learning, which are challenges related to (teacher, students, family, school administration, technology, educational content). Results showed that there were statistically significant differences between the mean of the responses of males and females in the challenges associated with the teacher of students with learning difficulties where the value of the significance level was less than (0.05) in favor of males. Also, the results of the study showed no statistical significance differences attribute to the variable of the educational level and years of experience. In the light of the results of the study, the researchers recommended the necessity of working to provide training programs for teachers with learning difficulties to face the challenges of distance learning and to take advantage of all available technologies and programs, and then, by facilitating and avoiding obstacles to distance learning for

people with learning difficulties in times of pandemics and urgent conditions.

(Alsaeidi,2021) examined the level of attitudes of secondary students with learning disability towards the use of the distance learning system in light of the spread of coronavirus (COVID-19) in Kuwait, the sample of the study consisted of (32) male and female students with learning disabilities at the secondary level. A questionnaire consisting of(23) paragraph and distributed on(3) axises, the results found that the attitudes of students with learning disabilities at the secondary level towards the use of distance learning were positive, with a moderate degree, where the general average was (2.32), with a percentage of (77%).The axis (feelings towards distance learning) ranked first, with an average of (2.37) and a percentage of (79%), followed by the axis (advantages towards distance learning), with an arithmetic average of (2.31), percentage of(77%) while the axis(turnout towards the distance learning) last rank in average (2.29)with percentage of (76%).The results did not reveal any statistical differences in the level of students' attitudes of learning disability towards distance learning by holding courses, improving the learning environment and distributing brochures that show the importance of using distance learning in teaching.

3. Method and procedures:

This part reviews a description of the study population, its sample, the method used, the study tool, how it was prepared, and procedures.

3.1 Study Approach:

The study used the analytical descriptive approach to reach the results through a questionnaire distributed by e-mail to the study sample.

3.2 Study population:

The study population consists of all resource-room teachers in the directorates of education in the capital Amman (the Qasbah region, the University region, the Marka region, the Sahab region, the Naour region) at the academic year 2021/2022, and their number (123) distributed to (26) male teachers and (97) female teacher.

3.3 Study sample:

(58) Male and female teachers were chosen, by random stratification, by (47%) of the study population, the following table presents the demographic information of the sample of the study.

Table 1. Distribution of the sample according to demographic variables

Variable	*Frequency*	*Ratio*
Gender	12	20.7
Male	46	79.3
Female		
Age		
30 years - less than 40 years	30	51.7
40 years - less than 50 years	27	46.6
50 years and over	1	1.7
Academic Qualification		
BA	39	67.2
Higher than Bachelor's	19	32.8
Years of Teaching Experience		
5 Years or Less	14	24.1
6-10 Years	13	22.4
11-15 Years	16	27.6
16 Years or More	15	25.9
Directorate		
Amman region	15	25.9
University region	12	20.7
Marca region	16	27.6
Sahab region	7	12.1
The Naour region	8	13.8
Total	405	100

3.4 Study tool

A questionnaire has been prepared to explore the problems facing teachers of students with learning disabilities in Mathematics during the Corona pandemic and what are the appropriate solutions from their point of view.

The questionnaire, in its initial form, consisted of (29) items divided into two parts: (28) items for problems and (1) item for solutions.

The answers of the questionnaire were graded according to the five-point scale: strongly agree, agree, neutral, disagree, strongly disagree, and the

Journal of the Association of Arab Universities for Higher Education Research (JAARU-RHE) Vol. (43) – No. (1) –2023, 245-256 (DOI: 10.36024/1248-043-001-016)

following grades were given: 5, 4, 3, 2, 1. for items 1-28, while the answer to proposed solutions was open.

The questionnaire was designed electronically through Google Drive and distributed to teachers by emails.

Validity of the tool:

The validity of the tool was verified by presenting it to a group of 8 experts; professors from Jordanian universities who are specialized in learning disabilities, officials in the Ministry of Education, supervisors and teachers. They were asked to ensure that the items cover the problems facing students with learning disabilities, and the observations of the referees were taken into account. Amendments of the items were made, and an agreement percentage of (80%) was approved. The final set of items included (28) item in addition to the open-ended question.

3.5 Reliability of the tool:

Two methods were used to ensure the reliability of the tool, namely: the internal consistency method for using the Krumbach Alpha equation on an exploratory sample consisting of (16) teachers, and the reliability coefficient in this method reached (0.87). The second method was a test-retest using the Pearson equation on the pilot sample. For the two applications that were separated by two weeks, and the reliability coefficient in this way was (0.84). These values were considered acceptable for the purposes of this research.

3.6 Data Analysis

The following statistical methods were used: means, standard deviations, rank and level of problems to answer the first question. Problems were judged as being high, medium or low as follows:

The low level is from 1-2.33
The average level is from 2.34 to 3.67
The high level is from 3.68-5

- Factorial design triple variance analysis (2 * 4 * 2) to answer the second question.

The Cronbach-Alpha equation and the Pearson correlation coefficient were used to verify the stability of the study instrument.

4. Results and Discussion

The first question: What are the problems facing the teaching of students with learning disabilities in Mathematics in the directorates of Amman in the light of Corona pandemic, from the point of view of the teachers.?

To answer this question, means and standard deviations were calculated as shown in Table (2):

Table (2)
Mean, standard deviations, and ranks of the problems facing the teaching of students with learning disabilities arranged in descending order

N	Paragraph	M	SD	Rank	Problems
1	The loss of students with learning disabilities to face-to-face education that stimulates their energies, develops their skills, and takes into account their circumstances, their cognitive and skill abilities.	4.59	0.94	1	High
23	There are no special educational platforms for students with learning disabilities.	4.43	0.96	2	High
21	Lack of availability of necessary portable devices for students who are unable to purchase them.	4.34	0.76	3	High
3	Failure to provide the program material on paper and electronically in distance learning to suit students with learning disabilities.	4.33	1.02	4	High
6	Low motivation among students with learning disabilities.	4.31	0.98	5	High
20	The lack of joint programs with psychologists, students, parents and teachers to bridge the gap that occurred during the Corona pandemic to enhance the mental health of students and parents.	4.31	0.78	5	High
8	Difficulty in perceiving and understanding the material in distance learning.	4.28	0.87	7	High
11	Dependence of teaching students with learning disabilities on individual sessions and small groups according to the type and condition of the disability in distance learning.	4.24	0.78	8	High
14	Lack of educational aids.	4.22	0.77	9	High
15	Parents sometimes get involved in teaching students wrongly.	4.22	0.68	9	High
18	Inadequate learning times, especially for parents of working students, to enable them to help their children with learning disabilities.	4.22	0.90	9	High

N	Paragraph	M	SD	Rank	Problems
2	Lack of program content that suits students with learning disabilities.	4.16	0.91	12	High
16	Parents not following up with the teacher (worksheets).	4.16	1.14	12	High
10	Students face problems in dealing with technical systems and programs for distance learning.	4.14	0.98	14	High
24	Students get tired and bored when studying remotely.	4.14	1.02	14	High
13	Incompatibility of the program with the condition of the students.	4.12	0.75	16	High
17	Internet low quality and speed problems.	4.12	0.94	16	High
22	Lack of direct communication mechanism between the teacher and the guardian.	4.10	0.77	18	High
7	Parents do not accept the idea of distance education.	4.07	1.01	19	High
4	Lack of teachers' training in interacting with the program material through distance learning.	4.05	1.00	20	High
19	Lack of follow-up and evaluation plans that monitor all challenges, problems, strengths and weaknesses.	4.05	0.83	20	High
26	Not having the opportunity to be informed of everything new in distance learning.	4.05	0.93	20	High
28	Inability of distance learning to provide education according to the student's time and place.	4.03	0.97	23	High
9	Difficulty with questions/activities/tasks provided to students in distance learning.	3.95	0.98	24	High
27	The student does not acquire new skills and knowledge through distance learning.	3.95	1.03	24	High
25	The student solves assignments, exercises and activities through the available means of communication.	3.81	1.05	26	High
5	Lack of responsibility of students for their learning	3.71	1.31	27	High
12	Lack of teachers' skill in handling and teaching the program.	3.52	0.92	28	Medium
Total Score		4.13	0.60		High

Table (2) showed that the problems facing the teaching of students with learning disabilities in Mathematics were generally high, as the mean (4.13) and a standard deviation (0.60), and most of the items came in the two higher levels, with the exception of one item, which came at the middle grade, as the mean ranged between (4.59-3.52). Item (1) which states that "students with learning disabilities lost face-to-face education that stimulates their energies and develops their skills and takes into account their circumstances, cognitive abilities and skills.", came at the first level with a mean (4.59) and a standard deviation (0.94), and with a high degree of problems. Item (23), which states that there are no special educational platforms for students with learning disabilities came at the second place, with a mean (4.43), a standard deviation (0.96) and a high degree of problems; it came next-to-last level. Item (5) which state that "the student should bear the responsibility of his learning in distance learning", with a mean (3.71) and a standard deviation (1.31) with a high level of problems. Item (12) came in the last place. It states "the lack of teachers' skill in dealing with and teaching the program," with a mean (3.52) and a standard deviation (0.92), and a moderate level of problems.

This result may be attributed to the fact that students with learning disabilities need face-to-face education because it takes into account all their senses, in addition to the teacher's ability to provide appropriate learning to each student according to his abilities, inclinations and desires, and the lack of special educational platforms for this group has increased the level of difficulties and problems they face, especially since a large number of these students were not able to deal with various devices and technologies when using the platform. This forms a great burden on parents as the intervention of some parents may be inappropriate for their children's education. Thus, a student bears alone the act of learning from distance from which caused him a lot of anxiety, fatigue and boredom; because he did not know the appropriate learning methods suitable for him, with no guide in the learning process.

The second question: Are there statistically significant differences at the

Journal of the Association of Arab Universities for Higher Education Research (JAARU-RHE) Vol. (43) – No. (1) –2023, 245-256 (DOI: 10.36024/1248-043-001-016)

level of ($\alpha \leq 0.05$) in the problems facing the teaching of students with learning disabilities in Mathematics in the directorates of Amman during the Corona pandemic in relation to gender variables, the number of years of experience in dealing with learning disabilities and educational qualification?

Table (3)
Means and standard deviations according to gender, years of and educational qualifications

Variables	Variable's Categories	Number	Mean	SD
Gender	Males	12	4.25	0.48
	Females	46	4.10	0.63
	Total	58	4.13	0.60
Experience	less than 5 years	14	4.07	0.45
	5 years - less than 10 years	13	4.15	0.24
	10 years - less than 15 years	16	4.08	0.99
	15 years and over	15	4.21	0.43
	Total	58	4.13	0.60
qualification	Bachelor's degree or less	39	4.14	0.69
	Higher than Bachelor's	19	4.11	0.38
	Total	58	4.13	0.60

It is noticed from the table (3) that there are apparent differences between the means of the problems facing the teaching of students with learning disabilities in Mathematics in relation to the variables of gender, years of experience and educational qualification. To determine whether the differences between the averages are statistically significant at a degree of ($\alpha = 0.05$), Three-Way ANOVA was applied, and the results of the analysis of variance came as shown in Table (4):

Table (4)
Differences in the response of the study sample according to gender, years of experience and educational qualifications

Contrast Source	Sum of squares	Degrees of freedom	Mean squares	q value	Indication level
Gender	0.232	1	0.232	0.594	0.444
Experience	0.195	3	0.065	0.166	0.919
Qualification	0.037	1	0.037	0.095	0.760
Error	20.34	52	0.391		
Total	20.783	57			

The results in Table (4) indicate that there are no statistically significant differences at the level ($0.05 \geq \alpha$) of the problems facing teaching students with learning disabilities in Mathematics in relation to gender, years of experience and educational qualification, based on the calculated (P) values, which amounted to (0.594) and a significance level of (0.444) for the gender variable, and reached (0.166) and a significance level of (0.919) for the years of experience, while it reached (0.095) with a significance level of (0.760) for the educational qualifications. These values are not statistically significant.

The result of the absence of differences due to gender may be attributed to the fact that teachers of students with learning disabilities were exposed to the same conditions within a single educational environment, regardless of their gender, in teaching this category of students during the Corona pandemic. They faced the same conditions, difficulties and problems in communicating with students during distance learning. During the short period when this category of students was allowed to learn face to face, which lasted about a month, and given the teachers' feelings of these difficulties, whether they were males or females, if their evaluation of the difficulties was at the same level, gender was not an influential factor in the differences between them. This may be attributed to the lack of differences due to years of experience, and it may be due to the teachers' sense of responsibility towards this category of students. Their practices were the same regardless of their years of experience. They feel the importance of practicing education for this group, regardless of their years of experience. Here, there was no difference due to the years of experience, which It may be attributed to the result of the absence of differences because of the educational qualification, and it may be due to the fact that teachers of different educational qualifications feel the

difficulties they face in teaching students, which were imposed on them by the Corona pandemic, with the absence of suitable alternatives to solve these problems.

The third question: What are the proposed solutions to these problems from the point of view of teachers of students with learning disabilities?

All members of the study sample (58) male and female teachers answered this question at a rate of (100%), knowing that this question allows at least one respondent to present three proposals or solutions, and their answers were distributed as follows:

1. A rate of (63%) of the sample responded to work on finding a special platform for students with learning disabilities that takes into account the nature of their learning and possesses special features and specifications that enable these students to benefit from and deal with them and with their parents.
2. A rate of (52%) of the respondents stressed the necessity of activating face-to-face education for this category of students. They believe that this education is the best for this category.
3. A rate of (48%) of the respondents stressed the necessity of integrating e-learning via a platform and traditional education so as to avoid shortcomings that may occur to students while learning through the platform.
4. A percentage of (30%) of the respondents stressed the necessity of holding educational and awareness sessions for the parents of these students to provide them with some strategies and methods in teaching Mathematics specifically, and to maintain communication between teachers and parents in providing.
5. A percentage of (25%) of the sample members suggested providing educational and explanatory aids in teaching Mathematics for this category of students, and providing them at home under the supervision of their parents or teachers while home visits.

These results and proposals proposed by the teachers may be attributed to education in Jordan in particular and in the world in general. The use of e-learning through educational platforms was based on the teachers' suggestions for this category of students. Education through platforms for this category of students may be deficient because the students have learning difficulties and may face problems in dealing with technology and platforms. Therefore, their proposal was to harmonize educational platforms that present topics that students with difficulties can deal with, while topics that have some difficulties may only work with face-to-face education, with a focus on educating parents because of their great role in this matter.

5. Recommendations:

1. Creating a special educational platform for this category of students by the Ministry of Education, taking into account the appropriateness materials presented.
2. Integrating learning of these students through a platform and traditional education on specific days of the week in order to achieve integration in learning.
3. Providing support and assistance to students and their parents through modern means and various programs through computer and cell phones to teach Mathematics.
4. Providing teachers and students with some teaching aids for teaching Mathematics, as well as computer or tablet tools and devices suitable for this category of students and their parents so that their learning can be sustainable and not interrupted.
5. allocating a special file for each student for follow up on his learning, diagnose the difficulties he faces, and suggest alternatives and solutions to these difficulties and problems.

6. References:

Affouneh, S.& Salha, S. (2020), Designing Quality E - Learning Environments for Emergency Remote Teaching in Coronavirus Crisis. Al Najah National University, Interdisciplinary. Journal of

Journal of the Association of Arab Universities for Higher Education Research (JAARU-RHE) Vol. (43) – No. (1) –2023, 245-256 (DOI: 10.36024/1248-043-001-016)

Virtual Learning in Medical Sciences. Interdiscip Virtual Learn Med Sci. 11(2).

Aldoghmi, Maha, (2020), The Extent to which the Academic Staff at Jouf University Applied Distance Learning Strategies during Corona Pandemic (COVID-19): The Blackboard Application as a Model, Journal of the Association of Arab Universities for Higher Education Research (JAARU-RHE, 41(1).

Al-Saeedi, Ahmad, (2021), Attitudes of students with learning disability towards the use of distance learning in the presence of the Coronavirus pandemic in Kuwait, Journal of Educational and Psychological Sciences, 5(8) Ghaza.

Al-Shehri, Ali (2020), The degree of teachers' use of distance education techniques in light of the COVID-19 pandemic from their point of view and its relationship to some variables, King Khalid University Journal of Educational Sciences, 32(1), King Khalid University.

American Psychiatric Association. (2013). Diagnostic and statistical manual of mental

Balkist, P. S., & Agustiani, N. (2020). Responses of students with special needs to online Mathematics learning during pandemic. Journal of Physics: Conference Series, 1657, 012031. https://doi.org/10.1088/1742-6596/1657/1/012031.

Basilaia G. & Kvavadze D. (2020). Transition to Online Education in Schools during a SARS CoV-2 Coronavirus (COVID-19). Pandemic in Georgia Business and Technology University, Research Gate.

Bryant, D.P., Bryant, B.R., & Hammill D.D. (2000). Characteristic behaviours of students with learning disabilities who have teacher-identified math weaknesses. Journal of Learning Disabilities, 33(2), 168-177.

Burdette, P., & Greer, D. (2014). Online learning and students with disabilities: Parent perspectives. Journal of Interactive Online Learning, 13(2), 67–88.

Geary, D.C. (2004). Mathematics and learning disabilities. Journal of Learning Disabilities, 37(1), 4-15.

Ghanem, Elham & Ibn Ayyash, Samir, (2020), Virtual education during the crisis of the spread of the emerging epidemic of Covid-19 in Arab universities, Journal of Studies in Humanities and Social Sciences, 3(1).

Ghzawi, Abdulqader & Alotaibi, Bandar, (2021), Identifying the Challenges of Distance Learning During the Corona Pandemic for Students with Learning Difficulties from the Point of View of their Teachers in Makkah Al-Mukarramah, Tikrit University Journal for Humanities sciences, 28(9), Tikrit University.

Iivari, N.; Sharma, S.; Ventä-Olkkonen, L. (2020). Digital Transformation of Everyday Life—How COVID-19 Pandemic Transformed the Basic Education of the Young Generation and Why Information Management Research Should Care. Int. J. Inf. Manag, 55, 1–6.

Jackson, H. G., & Neel, R. S. (2006). Observing Mathematics: Do students with EBD have access to standards-based Mathematics instruction. Education and Treatment of Children, 29(4), 1–22.

Kim, L.E.; Asbury, K. 'Like a Rug Had Been Pulled from under You': The Impact of COVID-19 on Teachers in England during the First Six Weeks of the UK Lockdown. Br. J. Educ. Psychol. 2020. Available online: https://bpspsychub.onlinelibrary.wiley.com/doi/epdf/10.1111/bjep.12381 (accessed on 30 October 2020).

Kirk, S. A., & Chalfant, J. C. (1984). Academic and developmental learning disabilities.

Lambert, R., & Tan, P. (2020). Does disability matter in Mathematics educational research? A critical comparison of research on students with and without disabilities. Mathematics Education Research Journal, 35, 5–35. https://doi.org/10.1007/s13394-019-00299-6.

Lambert, R.; Schuck, R.K. "The Wall Now Between Us": Teaching Math to Students with Disabilities during the COVID Spring of 2020. Under Review. Available online: https://osf.io/xe6b2/ (accessed on 30 October 2020).

Lerner, J. W. (2000). Learning disabilities: Theories, diagnosis, and teaching strategies (8th Ed.). Boston: Houghton Mifflin.

National Center for Learning Disabilities (2014, June 2). National Center for Learning Disabilities. Retrieved from http://www.ncld.org/.

Saqr, Ammar, (2020), Obstacles of distance education in public education in the State of Kuwait during the outbreak of the emerging Covid-19 virus pandemic (Covid 19) from the point of view of faculty members at Kuwait University, Educational Journal, 1(99), Sohag University.

Smith, C. (2020). Challenges and opportunities for teaching students with disabilities during the COVID-19 pandemic. International Journal of Multidisciplinary Perspectives in Higher Education, 5(1), 167–173.

Schuck, Rachel & Lambert, Rachel; (2021), The Wall Now between Us: Teaching Math to Students with Disabilities during the COVID Spring of 2020, *Asia-Pacific Education Researcher*, 30(3).

UNESCO. (2020). COVID-19 Educational disruption and response, www.en.unesco.org

Wei, X., Lenz, K. B., & Blackorby, J. (2013). Mathematics growth trajectories of students with disabilities: Disability category, gender, racial, and socioeconomic status differences from ages 7 to 17. Remedial and Special Education, 34(3), 154–165.

Wen, Z. A., Silverstein, E., Zhao, Y., Amog, A. L., Garnett, K., & Azenkot, S. (2020). Teacher views of Mathematics e-learning tools for students with specific learning disabilities. The 22nd International ACM SIGACCESS Conference on Computers and Accessibility, 1–13. https://doi.org/10.1145/3373625.3417029.