OBSTACLES TO DISTANCE EDUCATION FOR STUDENTS WITH LEARNING DISABILITIES AND WAYS TO FACE THEM: FROM THE POINT OF VIEW OF FEMALE TEACHERS

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ABSTRACT

Distance education for students with learning disabilities (LDs) has been used as an official practice in Saudi Arabia since COVID-19's outbreak. This study's aim was to explore the obstacles to distance education (DE) for these students and ways to face them based on teachers' opinions. In Saudi Arabia's Eastern Province, 111 female LDs teachers working in public elementary schools were randomly selected. The researchers collected data by sending online surveys via email and analyzed the data with the SPSS program version 24. The teachers rated obstacles to DE related to (1) students with LDs, (2) teachers, and (3) DE system infrastructure. There were no statistically significant differences in the mean scores of the teachers' views based on educational level or number of DE training courses attended, but there were statistically significant differences between the views of teachers with more than 10 years of experience and those of other teachers. However, there were no statistically significant differences in the average scores of teachers' views on ways to face DE obstacles associated with any of the studied variables. The teachers provided recommendations to support students with LDs, enhance family engagement in making instructional decisions, and provide DE training to students with LDs and their teachers.

Keywords: COVID-19, distance education, learning disabilities, learning disabilities teachers, special education teachers, obstacles.

INTRODUCTION

When the World Health Organization officially declared COVID-19's status as a pandemic on March 11, 2020, face-to-face education around the world was disrupted, and there arose an urgent need to use distance education (DE) as an alternative solution. Schools have not faced this level of disruption since World War II, and this pandemic posed a huge challenge for teachers in terms of urgently and intensively adapting their classes to the use of DE to maintain educational continuity at the same quality level as face-to-face education (Al-Jarah, 2020). The United Nations Educational, Scientific and Cultural Organization noted that with the advent of the pandemic, governments have been compelled to close schools, preventing 89% of students—which is more than 1.5 billion people—in 188 countries, including Saudi Arabia, from accessing classrooms in person (UNESCO, 2021). This crisis may lead to a change in the way teachers view traditional face-to-face education and DE for all students, especially those with learning disabilities (LDs)(Al-Ahmadi, 2009;

Alsarawi, 2021). The Saudi Ministry of Education (MOE) defined LDs based on Kirk's definition, which states that "a learning disability is a disorder in one or more of the basic psychological processes that include the understanding and use of written or spoken language, which appears in disorders of listening, thinking, speaking, reading and writing (spelling, expression, and calligraphy), and mathematics that are not due to reasons related to intellectual, hearing, visual disabilities or other types of disabilities, learning circumstances or family upbringing" (Kirk, 1962, as cited by MOE, 2020, p. 12).

LDs represent one of the most common types of disabilities in Saudi public schools. According to the Department of Planning and Development in the Eastern Province (2021), the total number of students who were classified as students with LDs at the elementary level in the Eastern Province was about 3,150 students (1,638 female and 1,512 male). Saudi Arabia has faced the transition from face-to-face education to DE by developing a ministerial plan that works to maximize opportunities for benefiting from technology and the media in all schools for all students, including those with LDs. The MOE uses EIN, a platform that contains 20 channels for K-12 students, and is activating Madrsti, a school platform that hosts classes and contains sets of educational materials and aids to aid students in DE. Through this program, the Saudi government plan was aimed to achieve the MOE's most important goal: "to achieve a safe and healthy return for students in all school levels and for their faculty and administrative staff" (MOE, 2021, p. 6).

Saudi schools' DE practices in response to the COVID-19 crisis are consistent with Al-Rubaie et al.'s (2004) definition, which indicated that DE is delivery of an educational mode or training materials through an electronic educational medium that includes TV channels, video tapes, audio tapes, computers, multimedia technology, or other available media to transmit information. In light of the lack of studies focusing on DE for students with LD and regardless of DE as a specific and clear concept, DE could be an effective teaching mode in the disabilities field, but it still represents a relatively recent experience at the local level with this category of disabilities, and it could be tainted by some obstacles (Alsarawi, 2021). The researchers believe the use of DE with students with LDs in Saudi schools may be not only a temporary necessity to adapt to the pandemic's conditions but also a complementary future direction to traditional education. Therefore, to achieve successful DE for students with LDs, it is clearly necessary to conduct this study, which addresses (a) exploring the obstacles to DE for female students with LDs based on their teachers' views and (b) discovering solutions that facilitate DE success in light of the pandemic and beyond.

LITERATURE REVIEW

Importance and Advantages of Distant Education for Students with Learning Disabilities

DE's philosophy relies on the theory of learner independence because of the lack of face-to-face interaction with teachers (Al-Kasji, 2012, p. 36), and it is worth noting that DE provides learning opportunities for those whose circumstances prevent them from enrolling in face-to-face education. When teachers and learners are physically separated, such as amid this pandemic, they must interact through modern means of communication. Thus, Internet connections must be high-quality, so virtual classrooms can be used as an alternative to traditional classrooms and so immediate feedback can be obtained from students (Lassoued et al., 2020). DE's importance lies in its enrichment of the educational process by providing audio, reading, and visual educational materials, which help students access required knowledge in various ways (Ayda, 2020). DE also helps solve the challenges facing schools, such as high rates of absenteeism and school dropout, by providing a flexible system for monitoring students' progress, developing learners' ability to learn independently, and enhancing communication between teachers and students and between teachers and students' families (Al-Khamisi, 2020).

Al-Maliki (2008) and Shuaib and Mohammad (2014) summarized some advantages of using DE with students with LDs:

- DE enhances the 21st-century skills of students with LDs in using technology to accomplish the tasks assigned to them by their teachers.
- DE facilitates the use of varied instructional strategies to meet the different needs of LDs.
- DE aids implementation of individual students' learning plans so schools and families can monitor students' progress and performance through various programs.

- In reading, writing, and math, DE uses multimedia and assistive technology to support students' specific disabilities.

Murders (2017) commented that DE allows use virtual synchronous and asynchronous classes that provide students with LDs with comfort and a flexible learning pace. Additionally, the online organizational structure provides students with LDs additional time to process and understand information received from teachers. Murders also indicated that students with LDs feel more independent and confident when attending remote online courses than they do when attending face-to-face classes.

Obstacles of Distant Education and Learning Disabilities

Despite DE's advantages for all students, research has shown that this type of education has various barriers. For instance, Assareh and Bidokht (2011) identified four main types of obstacles: (1) students-related obstacles, including students' ability to access the Internet and required devices and their levels of confidence, motivation, skills, and family income; (2) teacher-related obstacles, which include their levels of knowledge about and competency in using DE; (3) curriculum-related obstacles, involving lack of materials; and (4) schools' structural and support factors. Some studies have indicated that there are differences between male and female students regarding barriers to DE. For example, gender plays an influencing role in students' assessment (Muilenburg & Berge, 2005), and female students have shown less enthusiasm for DE than their male peers. Additionally, female students face more obstacles than male students in terms of using DE (Alshwiah, 2021; Aljarida & Al Batayna 2019).

These obstacles could be more challenging for students with LDs. Al-Thaher (2010) indicated that students with LDs have unique characteristics that must be considered when teaching. For example, these students show slow information processing, which may be due to problems in working memory, their ability to transfer information from short-term memory to long-term memory. Al-Thaher also indicated that students with LDs sometimes suffer from isolation, lack of engagement with peers, and repeated frustration and lack of motivation and perseverance in learning, which results in psychological and social pressures. It is evident from these characteristics that teaching these students represents a major challenge for teachers even in traditional classrooms, but the challenge may be greater when using DE.

Allam (2021) confirmed that there are some problems that may hinder DE for students in general, including students' and teachers' lack of experience. Teachers may not have access to the correct mechanisms for using DE, and students may have feelings of academic isolation during group discussions, which may be due to frequent interruption of Internet connections and the lack of an attractive interactive environment to raise students' responses to the educational process. Therefore, if the reality of DE, according to Allam's study, poses challenges for use with students in general, it likely is more challenging for use with students with LDs because of the need to meet their unique academic and behavioral needs. Therefore, DE specifically for students with LDs represents a thorny problem requiring a multidisciplinary team that works with a spirit of cooperation and efficiency within the virtual classroom and an efficient teacher who can use effective technical means that account for students' unique characteristics.

DE makes it difficult to for teachers to observe and understand students' feelings, especially anger and resentment (Shuaib & Mohammad, 2014). Students with LDs may suffer from a lack of interaction within the virtual classroom because some teachers lack understanding of effective virtual teaching strategies (Murders, 2017) or due to DE's lack of sensory stimuli that were provided by traditional classes (Shehata, 2021).

PURPOSE OF THE STUDY

As highlighted in the literature reviewed here, several studies have been focused on DE considering the LDs field; however, very few studies have examined the barriers facing female Saudi students with LDs, for whom (as for most Saudi students) this was their first DE experience. Therefore, this study was aimed at identifying the obstacles students faced when trying to learn virtually. Based on the relative newness of the DE experience for students with LDs in Saudi schools and these students' high possibility of facing relevant obstacles to DE, this study's purpose is twofold: (a) Explore the obstacles to DE for students with LDs, and b) explore practical solutions that help teachers face the obstacles of teaching students with LDs.

STUDY QUESTIONS

1. What are the obstacles to DE for students with LDs from teachers' prespectives?

   From this question, the three following sub-questions emerged:

   - what are the obstacles to DE for students with LDs related to DE system infrastructure?
   - what are the obstacles to DE for students with LDs related to students?
   - what are the obstacles to DE for students with LDs related to teachers?

2. To what extent do teachers' views differ regarding the obstacles to DE with differences in academic degree, years of teaching experience, and attended the number of professional development courses on DE for students with LDs?
3. What are the ways to confront the obstacles to DE for students with LDs from the viewpoint of their teachers?
4. How different are the teachers' views on ways to confront DE obstacles for students with LDs based the studied variables (academic degree, years of teaching experience, and number of courses attended on DE for students with LDs)?

STUDY RATIONALE

The findings of this study could pave the way for additional practical and research endeavors. The hope for this study is to open new horizons for educational developers and researchers in the educational field to address challenges limiting the effectiveness of teaching students, especially female students, with LDs through DE. Stakeholders and decision makers in the MOE could use teachers' input to improve DE quality by developing educational services and providing the needed support and relevant professional development opportunities.

TERMINOLOGY

The researchers identified procedural definitions of the terms used in this study to prevent the possibility of conceptual misunderstanding of the research context.

Obstacles are challenges standing in the way of achieving effective education that meets the needs of students with LDs according to their unique characteristics and their individual educational plans, including challenges related to (a) the DE system infrastructure, (b) the students with LDs, and (c) LDs teachers.

Distance education (DE) is a type of e-learning that requires use of the Internet. In DE, students study through a virtual classroom within an educational platform, in which the teacher uses multimedia technology and audio or visual presentations. The teacher–learner interaction takes place synchronously or asynchronously, and it has many names, including digital education, virtual classrooms, Internet education, and education technology.

LDs teachers are teachers licensed by the MOE to teach students with LDs, with bachelor's degrees in special education and (a) specialization in the LDs field or (b) higher diplomas or postgraduate studies in the LDs field.

METHOD

To answer the research questions, the researchers used the descriptive survey method, which was specifically selected for its suitability for the study's purpose; it focuses on describing the researched phenomenon or the relationship between variables without the need to study cause-and-effect relationships (Creswell, 2014). In this research, the researchers adopted the descriptive approach by using a questionnaire to survey the participants' opinions, collecting quantitative data that were transformed into descriptive statistics and graphs.

Research Setting and Participants

The study took place in Saudi Arabia's Eastern Province during the 2020–2021 academic year. The targeted population comprised female teachers who were working in LDs programs in elementary schools in the Eastern Province. The total population was 188 teachers from 94 school, according to the Eastern Province's Planning and Development Department's 2021 statistics. Two teachers from each school were targeted to be involved in the study. The researchers conducted the study using a random sample, and 111 female LDs teachers—about 60.65% of the target population—participated in the study.

Table 1 shows the variation in the participants' demographic information. The participating teachers were working in different cities of the Eastern Province (49.5% in Al-Qatif, 28.8% in Dammam, 15.3% in Al-Khobar, and 6.3% in other cities). Most of the teachers hold bachelor's degrees, whereas only four teachers hold master's degrees. More than 50% of the participants had more than 10 years of LDs teaching experience. Regarding the number of training courses on DE for students with LDs the teachers had completed, 61 teachers had completed 1–5 courses, whereas 44 teachers had completed more than 6 courses. Only 6 teachers had not completed any relevant courses on DE for students with LDs.

Table 1. Demographic information

Demographic Information	Category	N
City	Dammam	32 (28.8%)
	Khobar	17 (15.3%)
	Qatif	55 (49.5%)
	Other cities	7 (6.3%)
Academic Degree	Bachelor	107 (96.4%)
	Master	4 (3.6%)
Years of Teaching Experience	Less than 5	4 (3.6%)
	5 to 10	47 (42.3%)
	More than 10	60 (54.1%)
Numbers of Training Courses on DE for Students with LDs	0	6 (5.4%)
	1 to 5	61 (55.0%)
	More than 6	44 (39.6%)

Instrument

The researchers designed a five-point Likert scale questionnaire tool (*strongly agree* = 5; *agree* = 4; *neutral* = 3; *disagree* = 2; and *strongly disagree* = 1) based on the relevant literature. The questionnaire includes two sections: (a) basic information (teaching city, academic degree, years of teaching experience, and number of completed training courses on DE for students with LDs) and (b) questions about the obstacles to DE for students with LDs. In its initial form, the questionnaire's second portion contained 35 items distributed among four domains—(1) infrastructure-related obstacles, (2) teacher-related obstacles, (3) student-related obstacles, and (4) confronting DE obstacles. The questionnaire was electronically distributed via e-mail. The link was sent by the Director of the Special Education Department, which has a list of the email addresses of the targeted teachers. Completing the questionnaire takes approximately 7 minutes.

Data Collection and Statistical Analysis

After establishing the questionnaire's validity and reliability, the researchers electronically distributed the revised questionnaire to the research sample. After obtaining official approval from the Department of Special Education in the Eastern Province and the Institutional Review Board of Imam Abdulrahman Bin Faisal University, the researchers contacted the Director of the Department of Special Education about sending the electronic questionnaire to the teachers via official department e-mail. The survey link was sent

to all targeted teachers except the teachers who participated in the pilot study. A week later, to increase the response rate, they contacted the director again to remind the teachers to participate in the study. It took approximately 6 weeks for the questionnaire to be completed by 111 teachers. The researchers entered the data into the Statistical Package for Social Sciences (SPSS) program and extracted the results.

After the data was encoded and entered into the SPSS, the researchers determined the length of the cells for the Likert scale (lower and upper limits of each response category). by calculating the scale's range (5 – 1 = 4) and dividing the range by the scale's number of cells (5) to obtain the correct cell length (4 / 5 = 0.80) (Abdel Fattah, 2013). This cell length value was added to the lowest value in the scale (the beginning of the scale), to determine the upper bound of the top cell, and the range of each cell was calculated as follows:

- Values from 1 to 1.80 represent *strongly disagree*.
- Values from 1.81 to 2.60 represent *disagree.*
- Values from 2.61 to 3.40 represent *neutral*.
- Values from 3.41 to 4.20 represent *agree*.
- Values from 4.21 to 5.00 represent *strongly agree*.

Then, the following statistics were calculated:

1. Pearson's correlation coefficient, to measure the validity and the internal consistency.
2. Cronbach's alpha, to measure reliability.
3. Frequencies, percentages, and arithmetic means, to understand the responses to the study tool items and their domains.
4. The standard deviation of the scale responses arranged from the least to the greatest when the artithmetic means are equal.
5. T-test, to identify the response differences attributable to academic degree.
6. Analysis of variance (ANOVA), to identify the differences attributable to a variable (e.g., years of teaching experience or number of training courses on DE of students with LD).

Content Validity

To ensure the questionnaire actually measures what it is designed to measure, the researchers presented the questionnaire in its initial form to 14 experts in special education and psychology. These experts included 2 school teachers and 12 university faculty members who hold at least master's degrees. They asked the experts to provide feedback regarding the items' relevancy to the domains and the phrases' clarity and to provide any suggestions for further developing the tool. The experts' opinions were evaluated by the researchers to improve the questionnaire's statements that reached 80% of the experts' agreement regarding need for amendment. Six items were deleted, 2 items were added, and 7 items were modified. The questionnaire's initial form comprised 35 items, and the questionnaire was reduced to 31 items following the amendment.

Internal Consistency

To ensure the validity of the scale's construction, the researchers calculated the instrument's internal consistency. The researchers piloted the questionnaire to 40 LDs teachers, who were excluded from the final sample of the study. The Pearson correlation coefficient was calculated for each item and the domain to which it belongs. The level of statistical significance was 0.01. Table 2 shows the values of internal consistency, which are statistically significant for all items.

Table 2. Values of survey items' Pearson's Correlation Coefficients

Obstacles Related to DE Infrastructure		Obstacles Related to LDs Teachers		Obstacles Related to Students with LDs		Ways to Confront DE Obstacles	
Item Number	Correlation Coefficient	Item Number	Correlation Coefficient	Item Number	Correlation Coefficient	Item Number	Correlation Coefficient
1	.796**	9	.443**	16	.761**	23	.752**
2	.558**	10	.530**	17	.798**	24	.725**
3	.818**	11	.783**	18	.730**	25	.618**
4	.686**	12	.583**	19	.788**	26	.657**
5	.479**	13	.664**	20	.723**	27	.670**
6	.627**	14	.743**	21	.592**	28	.474**
7	.767**	15	.654**	22	.775**	29	.604**
8	.501**					30	.729**
						31	

***The correlation coefficient for all data of the domain to which it belongs, at the level of statistical significance 0.01*

Reliability

Based on the pilot sample, the questionnaire's reliability was calculated using Cronbach's alpha. The tool's reliability value at the time of application was 0.92, which is a high-stability coefficient that can be trusted in the tool's application. Table 3 shows the reliability values. The Cronbach's alpha value for the questionnaire's domains ranged between 0.75 and 0.86, and the overall value was 0.92, which indicates that the research tool has a high degree of reliability that can be relied upon in conducting the study (Cortina, 1993).

Table 3. Values of Cronbach's Alpha for the survey domains

Domains	Number of Items	Cronbach's Alpha
Obstacles Related to DE Infrastructure	8	0.81
Obstacles Related to LDs Teachers	7	0.75
Obstacles Related to Students with LDs	7	0.86
Ways to Confront DE Obstacles	9	0.84
General Reliability	31	0.92

FINDINGS

What are the Obstacles to DE for Students with LDs from Teachers' Perspectives?

To answer this question, the researchers calculated frequencies, percentages, arithmetic means, and standard deviations. Table 4 provides an overview of the obstacles to DE for students with LDs from teachers' perspectives based on the means and the order of domains in terms of the level of agreement on the Likert scale. It is evident from the table that the student-related obstacles, for which the mean was 4.00 out of 5, came in first place in terms of agreement, whereas the teacher-related obstacles, for which the mean was 3.82 out of 5, came in second place. Finally, in third place came the obstacles related to DE system infrastructure, for which the mean was 3.66 out of 5. Overall, the mean of all obstacle domains was 3.83 out of 5. Therefore, the researchers concluded that the teachers agree that there are high barriers to teaching

their students with DE. The general mean of all obstacles, at 3.83, is an average that falls within the fourth category of the five-point Likert scale (3.41 to 4.20). This category that indicates overall agreement that there are significant obstacles to DE for students with LDs. The following sections summarize the obstacles related to students with LDs, teachers, and DE system infrastructure.

Table 4. Obstacles to DE for students with LDs based on teachers' responses

Domain	Mean	Agreement Level	Order
Obstacles Related to DE Infrastructure	3.66	Agree	3
Obstacles Related to LDs Teachers	3.82	Agree	2
Obstacles Related to Students With LDs	4.00	Agree	1
Overall Mean	3.83	Agree	

Obstacles related to Students with LDs

Table 5 shows that the participants strongly agree with the items that measure the obstacles to DE related to students with LDs. The responses' agreement average was between 4.22 and 4.26, which is an average located in the fifth category (4.21 to 5), thus indicating the *strongly agree* option.

The order of the specific obstacles based on the participants' responses from the largest mean to the least mean are as follows:

1. Weakness of motor skills, such as holding a pen, among students with LDs, which is significant because of repetitive writing on tablets.
2. Lack of family awareness regarding the need to create a home educational environment free of distractions for their children.

On the other hand, the teachers agreed on the items measuring the student-related DE obstacles from 3 to 7 according to their arrangement of phrases, for which the mean lied between 3.47 and 4.14, which is an average that falls in the fourth category of the five-point Likert scale (3.41–4.20), the *agree* category. The following is a presentation of the obstacles from the greatest mean to the smallest mean:

1. The student's lack of face-to-face support, such as the teacher's body language, and external motivation during DE.
2. The student's preoccupation with distractions available on electronic devices during DE.
3. The lack of visual communication, despite the student's need for it.
4. StudentsLDs' lack of motivation for DE.
5. The student's family's lack of cooperation with the LDs teacher regarding DE.

Teachers somewhat agreed that students' negative attitudes toward DE prevent them from being taught effectively; the mean was 3.20, which falls in the third category of the five-point Likert scale (2.61–3.40), representing the *somewhat agree* option. Finally, by evaluating the overall mean of the items covering the student-related DE obstacles, it becomes clear to that the teachers agree with the items in general; the general arithmetic mean reached for all obstacles 4.00, which falls into the fourth category of the five-point Likert scale, between 3.41 and 4.20.

Table 5. Results of teachers' responses to the items regarding DE obstacles related to students with LDs

Item	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	SD	Item Order
Lack of visual communication despite student's need for it.	42 (37.8%)	49 (44.1%)	9 (8.1%)	10 (9.0%)	1 (0.9%)	4.09	0.95	5
The student's lack of motor skills, such as holding a pen, because of repetitive writing on tablets.	58 (52.3%)	35 (31.5%)	8 (7.2%)	9 (8.1%)	1 (0.9%)	4.26	0.97	1
The student's lack of direct support, such as the teacher's body language, and motivation during DE.	49 (44.1%)	39 (35.1%)	15 (13.5%)	6 (5.4%)	2 (1.8%)	4.14	0.97	3
The student's lack of motivation for DE.	32 (28.8%)	34 (30.6%)	28 (25.2%)	14 (12.6%)	3 (2.7%)	3.70	1.10	6
The student's family's lack of cooperation with the LDs teacher during DE.	22 (19.8%)	36 (32.4%)	29 (26.1%)	20 (18.0%)	4 (3.6%)	3.47	1.11	7
The student's family's low awareness of the need to provide an educational environment at home free of distractions for their children with LDs.	48 (43.2%)	47 (42.3%)	9 (8.1%)	6 (5.4%)	1 (0.9%)	4.22	0.88	2
The student's preoccupation with the distractions available on devices during DE.	46 (41.4%)	44 (39.6%)	8 (7.2%)	12 (10.8%)	1 (0.9%)	4.10	1.00	4
Overall Mean						4.0		

Obstacles related to LDs Teachers

The average for the obstacles related to the teachers was 4.43, an average located in the fifth category of the five-point Likert scale from 4.21 to 5, indicating strong agreement. The teachers agree on the items that measure the obstacles related to the teacher from 2 to 6, according to their arrangement in the below "arrangement of phrase", where their average ranges between 3.49 and 4.16, in the fourth category of the five-point Likert scale from 3.41 to 4.20, indicating agreement. Based on Table 6, the obstacles related to the teachers and their mean are listed from the largest to the smallest mean as follows:

1. The difficulty of the process of identifying and evaluating students with LDs during DE.
2. The difficulty of managing the behavior of students with LDs during DE.
3. The difficulty of clarifying abstract concepts during DE.
4. The difficulty of using assessment tools, including the difficulty of measuring the goals of individual educational plans.
5. The difficulty of attracting the attention of students in virtual classes.
6. The lack of cooperation between the general education teacher and the LD teacher in achieving individual educational goals.

On the other hand, the teachers agree to some extent that the negative attitudes of teachers could affect the effectiveness of the DE for their students with LDs. By parameter, the mean was 3.20, an average in the third category of the five-point Likert scale, from 2.61 to 3.40, indicating agreement to some extent. We concluded by looking at the general average of the axis of learning obstacles for female students with distance learning difficulties related to the female teacher. The fourth category of the five-point scale (from 3.41 to 4.20) indicates agreement.

Table 6. Results of teachers' responses on the items of obstacles related to LD teachers to DE

Item	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	SD	Item Order
Difficulty of conducting evaluation of students with LDs during DE.	66 (59.5%)	30 (27%)	13 (11.7%)	1 (0.9%)	1 (0.9%)	4.43	0.8	1
Difficulty of managing the behavior of students with LDS during DE.	46 (41.4%)	44 (39.6%)	15 (13.5%)	5 (4.5%)	1 (0.9%)	4.16	0.89	2
Difficulty of teaching abstract concepts during DE.	39 (35.1%)	47 (42.3%)	12 (10.8%)	12 (10.8%)	1 (0.9%)	4	0.99	3
Difficulty of attracting students with LDs during DE.	24 (21.6%)	33 (29.7%)	33 (29.7%)	19 (17.1%)	2 (1.8%)	3.52	1.07	5
Lack of cooperation between general education teachers and LD teachers to achieve individual educational goals during DE.	23 (20.7%)	41 (36.9%)	19 (17.1%)	23 (20.7%)	5 (4.5%)	3.49	1.17	6
Negative attitudes of teachers toward the effectiveness of DE with LDs.	15 (13.5%)	32 (28.8%)	26 (23.4%)	36 (32.4%)	2 (1.8%)	3.2	1.09	7
Difficulty of using objective assessment tools to mentor the progress of students with LDs toward their goals.	28 (25.2%)	60 (54.1%)	13 (11.7%)	9 (8.1%)	1 (.9%)	3.95	0.88	4
Overall Mean				3.82				

Obstacles related to the Infrastructure of DE

The table shows items 1 to 7. The data shows that teachers acknowledge that they face some obstacles related to the infrastructure of DE. The overall mean of all obstacles was 3.66, in the fourth category of the five-point scale from 3.41 to 4.20, indicating that teachers agree with the items on the scale. Here is a summary of the obstacles and their means from the greatest to the smallest mean:

1. Most students with LDs lack the technical skills necessary for DE.
2. There are no explicit laws, legislation or regulations in the Ministry of Education that preserve the rights of students with LDs during DE.
3. The low income of families prevents them from providing a computer for their children with LDs.
4. There may be a lack of Internet connection during DE.
5. There may be limited training opportunities that focus on adapting to DE in students with LDs.
6. Some teachers may lack the technical skills necessary for DE.
7. There are no technical or educational alternatives for supporting students with LDs during DE.

On the other hand, the teachers believe to some extent that there are negative trends in the school administration toward the use of DE with the students with LDs; the mean was 2.78, in the third category of the five-point scale from 2.61 to 3.40, reflecting consent to some extent.

Table 7. Results of teachers' responses to the items of obstacles to DE for students with LDs

Item	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	SD	Item Order
There are no explicit laws, legislation and regulations in the Ministry of Education that preserve the rights of students with LDs during DE.	46 (41.4%)	35 (31.5%)	15 (13.5%)	10 (9%)	5 (4.5 %)	3.96	1.15	2
The negative attitudes of the school administration toward the use of DE with students with LDs	11 (9.9%)	19 (17.1%)	32 (28.8%)	33 (29.7%)	16 (14.4%)	2.78	1.19	8
Lack of technical alternatives to support students with LDs during DE.	22 (19.8%)	42 (37.8%)	18 (16.2%)	24 (21.6%)	5 (4.5%)	3.47	1.17	7
There may be a lack of Internet connection during DE.	35 (31.5%)	44 (39.6%)	18 (16.2%)	12(10.8%)	2 (1.8%)	3.88	1.03	4
Some teachers need to develop their technical skills for DE.	18 (34%)	49 (44.1%)	23 (20.7%)	20 (18%)	1 (0.9%)	3.57	1	6
Some students with LDs lack the technical skills needed for DE.	34 (30.6%)	51 (45.9%)	16 (14.4%)	8 (7.2%)	2 (1.8%)	3.96	0.95	1
Lack of training opportunities that focus on conditioning students with LDs for DE.	21 (18.9.2%)	57 (51.4%)	21 (18.9%)	10 (9%)	2 (1.8%)	3.77	0.92	5
Low income may prevent families from providing computers for their children with LDs.	34 (30.6%)	46 (41.4)	20 (18%)	9 (8.1%)	2 (1.8 %)	3.91	0.99	3
Overall Mean				3.66				

To What Extent do Teachers' Views Differ Regarding the Obstacles to DE with Differences in Academic Degree, Years of Teaching Experience, and Attended the Number of Professional Development Courses on DE for Students with LDs?

Academic Degree

The researchers conducted T-tests to examine the differences between the average scores of teachers' views on DE obstacles that are attributed to the educational qualification variable (academic degree). The data on Table 8 show that are no statistically significant differences in the perspectives of teachers on the obstacles to DE due to academic degree, where the T value reached 0.403 with a statistical significance of 0.687.

Table 8. Differences in the mean of DE obstacles that are attributed to the academic degree

Academic Degree	Number of teachers	Mean	Standard Division SD	T Value	Statistical Significance
Bachelor's degree	107	84.1402	14.08495	0.403	0.687
Masters' degree	4	81.2500	13.57387		

Years of Teaching Experience

The researchers used an analysis of variance ANOVA to test the difference between teachers' perspectives on the obstacles to DE attributed to the variable years of teaching experience (see Table 9). We found that there are statistically significant differences in teachers' perspectives on obstacles to DE due to the years of teaching, where the value of (P) was (3.941) and the value of statistical significance was (0.022). To find the mean differences in favor of any category of years of teaching experience, a post-test was conducted as shown in Table 11. The results were in favor of those teachers with more than 10 years of experience.

Table 9. Differences in the mean of DE obstacles that are attributed to the years of teaching experience

	Sum of squares	Degrees of freedom	Average squares	F	Statistical Significance
Between groups	1470.054	2	735.027	3.941	0.22
Within groups	20143.801	108	186.517		
Total	21613.856	110			

Table 10. Shefi post-test for finding the differences in the average of DE due to three years of experience

Years of teaching experience	Differences between means	Error deviation	Statistical Significance
>10	14.33333*	7.05250	. 045
<5		2.66027	.027
(5-10)	5.97695*	110	

Number of Professional Development Courses on DE of Students with LDs that were Teachers Attended

To examine the differences in obstacles to DE for students with LDs in terms of the variable number of courses through DE for these students, we conducted an ANOVA. Based on the results, there are no statistically significant differences in the teachers' perspectives on the obstacles to DE attributed to the number of taught courses on DE for students with LDs, where the value of (P) was (0.473) and the value of statistical significance was (0.624).

Table 11. Differences in the mean of DE obstacles attributed to the number of professional development courses on DE

	Sum of squares	Degrees of freedom	Average squares	F	Statistical Significance
Between groups	187.637	2	93.818	.473	0.624
Within groups	21426.219	108	198.391		
Total	21613.856	110			

What are the Ways to Confront the Obstacles to DE for Students with LDs from the Viewpoint of Their Teachers?

The teachers strongly believe that there are ways to address the highlighted obstacles regardless of their type. The items on table 12 from 1 to 6 show the arithmetical mean ranges between 4.31 and 4.59, in the fifth category of the five-point Likert scale. The category of 4.21 to 5 indicates strong agreement. The following items represent the ways that the teachers believe they can confront the obstacles to DE for students with LDs from the largest to the smallest mean:

1. Educating families about the importance of creating an educational environment for their children at home, free of distractions.
2. Providing free internet to students with limited income.
3. Training families on how to provide appropriate support to children during DE.
4. Passing laws, legislation and regulations in the Ministry of Education to protect the rights of users with LDs in DE.
5. Providing materials and moral incentives for users in DE.

On the other hand, the parameters ranged from 7 to 9, according to their arrangement in the above table "arrangement of expression," where their arithmetical mean ranged between (3.76 to 4.20), an average falling into the fourth category of the five-point scale (from 3.41 to 4.20) and indicating approval. The following is a presentation of the obstacles and their mean from the largest to the smallest mean:

1. Using feedback and reports issued by the LD teacher to improve DE.
2. Creating active social networking sites and educational forums to enhance cooperation and interaction between students.
3. Providing asynchronous education by registering the classroom through the virtual platform.

By looking at the general average of the axis of ways to confront the obstacles to teaching students with SLD, it becomes clear to us that teachers strongly agree with the items of the axis in general, as the general arithmetical mean of all obstacles was 4.31, falling into the fifth category of the five-point scale from (4.21 to 5) and indicating strong agreement.

Table 12. Results of teachers' responses on the items of Obstacles related to students with LDs to DE

Item	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	SD	Item Order
Laying down laws, legislation and regulations in the Ministry of Education that preserve the rights of DE users.	54 (48.6%)	45 (40.5%)	7 (6.3%)	5 (4.5%)		4.33	0.79	5
Activating social networking and educational media to promote cooperation and interaction between students with LDs and their teachers.	38 (34.2%)	53 (47.7%)	15 (13.5%)	5 (4.5%)		4.12	0.81	8
Providing asynchronous classes by recording classes on the school platform.	28 (25.2%)	44 (39.6%)	23 (20.7%)	16 (14.4%)		3.76	0.99	9
Taking advantage of feedback and reports issued by the LD teachers to improve the remote learning process.	31 (27.9%)	71 (64%)	9 (8.1%)			4.2	0.57	7
Providing free internet to students with STDs from low income families.	75 (67.6%)	30 (27%)	3 (2.7%)	2 (1.8%)	1 (0.9%)	4.59	0.72	2
Increasing family awareness regarding the creation of an educational environment at home, free of distractions.	71 (64%)	37 (33.3%)	1 (0.9%)	1 (0.9%)	1 (0.9%)	4.59	0.65	1
Providing training for families in how to support their children with LDs during DE.	60 (54.1%)	46 (41.4%)	3 (2.7%)	2 (1.8%)		4.48	0.64	3
Providing training for teachers, students, and families on how to use ED platforms.	58 (52.3%)	46 (41.4)	5 (4.5%)	1 (0.9%)	1 (0.9%)	4.43	0.71	4
Efficient provision of tangible and verbal rewards for students during DE.	56 (50.5%)	41 (36.9%)	8 (7.2%)	4 (3.6%)	2 (1.8%)	4.31	0.89	6
Overall Mean	4.31							

How Different are the Teachers' Views on Ways to Confront DE Obstacles for Students with LDs Based the Studied Variables (academic degree, years of teaching experience, and number of courses attended on DE for students with LDs)?

Academic Degree

There are no statistically significant differences in the average scores for teachers' responses on the ways of confronting DE obstacles that are attributed to the academic degree variable, where the T value is (-0.466), statistically prominent (0.642) but not statistically significant (table).

Table 13. Differences in the mean of DE obstacles that are attributed to the academic degree

Academic Degree	Number of teachers	Mean	Stander Division SD	T Value	Statistical Significance
Bachelor's degree	107	38.7570	4.15238	-0.466	0.642
Master's degree	4	39.7500	5.31507		

Years of Teaching Experience

However, there are statistically significant differences in teachers' views about ways to confront the obstacles to DE due to years of experience, where the value of (F) was (0.992). The statistical significance was (0.374).

Table 14. Differences in the mean of DE obstacles that are attributed to the years of teaching experience

	Sum of squares	Degrees of freedom	Average squares	F	Statistical Significance
Between groups	34.558	2	17.279	0.992	0.374
Within groups	1881.677	108	17.423		
Total	1916.234	110			

Number of Professional Development Courses on the DE of Students with LDs that were attended by the Teachers

In terms of PD courses on DE, there are no statistically significant differences in the average degrees of the female teachers' perspectives on ways to confront the obstacles to DE due to the variable number of PD courses available, where the value of (F) was (0.339) and the value of statistical significance was (0.714).

Table 15. Differences in the mean of DE obstacles that are attributed to the number of professional development courses on DE

	Sum of squares	Degrees of freedom	Average squares	F	Statistical Significance
Between groups	34.558	2	17.279	0.992	0.374
Within groups	1881.677	108	17.423		
Total	1916.234	110			

DISCUSSIONS AND CONCLUSION

What are the Obstacles to DE for Students with LDs from Teachers' Perspectives?

The results indicate that teachers strongly believe that obstacles to DE related to the LDs come first, and more specifically to the weakness of the motor skills of students with LDs, which ranked first among these obstacles with an average of 4.26. This result can be explained side by side with the unique characteristics of the LDs that require special support, guidance, direct instruction, and modeling on handwriting and hand activities, which showed us the most prominent obstacles to DE, as well as the students' need for motivation and direct support, face-to-face, from their teachers (Al-Badawi, 2017; Al-Ahmari, 2019). The difficulty of the identification process and the application of fair evaluation during DE ranked first among obstacles related to teachers with an average of 4.43. This result aligned with the complexity of evaluation activities and mentoring progress for all students during DE, which can be more challenging for LDs because any evaluation errors may deprive them of appropriate services and suitable placement decisions (Mohammed, 2020; Al-Waqfi, 2015). Thus, it becomes clear to us that it is difficult to carry out the identification process during DE. On the other hand, we attributed the difficulty of conducting objective evaluation to the cultural dimension due to the lack of direct visual communication between the students with LDs and their teachers during DE (such as the display camera feature in some female schools), which may hinder the process of identifying those students and direct monitoring of their progress even after identifying them (Al-Ahmari, 2019). The obstacles related to the infrastructure of DE came in third. It is worth noting that teachers ranked the lack of technical skills of LDs as the first obstacle related to the infrastructure of DE in the Saudi school system, with an average of 3.96. This result is consistent with what had been found locally—the low level of student knowledge in using virtual classrooms and educational technologies (Al-Harbi & Tayeb, 2020). Several authers have indicated that regardless of the type of obstacles to DE, the lack of priorexpertise with DE represents the key of these obstacles, and the hope taht the COVID-19 pandemic becomes a incentive for promoting a better robust system of DE **(Aslam et al., 2021a; Aslam et al., 2021b; &Alshwiah, 2021)**.

To What Extent do Teachers' Views Differ Regarding the Obstacles to DE with Differences in Academic Degree, Years of Teaching Experience, and Attended the Number of Professional Development Courses on DE for Students with LDs?

As for the educational qualification variable, there were no statistically significant differences in the average degrees of female teachers' perspectives on DE obstacles due to their educational levels. We attribute this observation to the fact that the majority of participants were from the Eastern Province and therefore have the same characteristics, as 96.4% of them held bachelor's degrees. This result agrees with Al-Badawi (2017), who found that the judgment on the obstacles to e-learning by teachers does not differ according to the academic degree variable. In contrast there were statistically significant differences in the average degrees of the parameters due to years of teaching experience. The differences were between those with more than 10 years of experience and with less than five years of experience and those whose years of experience ranged between five and 10 years in favor of those with more than 10 years. This result may indicate that teachers with more than 10 years of teaching experience are more able to face DE obstacles. The result of this study differs from the conclusion drawn by Al-Aqaly (2018), who found that there are no differences in the obstacles to using technology due to years of teaching experience.

Regarding the number of passed courses in DE, the results indicated that there were no statistically significant differences in the average scores of the teachers' views due to the variable of passed courses on distance education for LDs. This study agrees with the one conducted by Al-Badawi (2017), who concluded that the judgment on the obstacles of DE does not differ according to the variable number of courses passed in the field of DE. In line with this result, we believe that it is more appropriate for us to focus in future studies on the types of courses and their relevance to DE for LDs as well on the number of courses passed. This finding supports Alshwiah (2021) that indicated that teacher-related obstacles can be addressed by focusing on quality of providing teachers with appropriate, meaningful, relevant, and purposeful training in the use of technology and the DE system.

What are the Ways to Confront the Obstacles to DE for Students with LDs from the Viewpoint of Their Teachers?

A majority of the teachers suggested that one of the most prominent ways to confront the obstacles to teaching LDs with DE is to educate parents and families about the importance of creating a convenient and supportive environment for children at home. Ferri et al. (2020) also confirmed the importance of creating an environment free of distractions at home to maximize the benefits of DE. It is worth noting that the provision of free internet to students from low -income families came in the second place in ways of facing the obstacles of teaching students with LDs, with an average of 4.59. This result confirms the findings of Al-Salami and Makawi (2020) regarding the necessity of providing a strong internet network in the public schools to face the obstacles of DE. The result of the current study also agrees with the results of other studies that indicated that the presence of slow or no internet at all is an obstacle that needs to be addressed to make DE available to all students (Al-Jama`an& Al-Jama`an, 2019; Al-Maliki& Sha`ban, 2020; Al-Nafjan, 2020; Al-Otaibi, 2020; Fauzi & Khusuma.2020; Ferri et al. 2020; Mohammed, 2020). Thus, the current study is consistent with Alshwiah (2021) in terms of encouraging that the decision makers of the Saudi Ministry of Education should provid computers with high-speed Internet to the students, and schools should provide asynchronous sessions to make course content accessible for all students.

As for training parents on how to provide appropriate support to their children during DE, it ranked third as one of the solutions to DE obstacles with students with LDs, with an average of 4.48. This finding supports the findings of Ferri et al. (2020) regarding the need to address the challenges related to DE in an emergency situation represented by the lack of parental support for their childern. This result is also consistent with what Fauzi and Khusuma (2020) said about the need to enhance the cooperation of parents during DE with their children. Thus, we conclude that training parents on how to provide appropriate support to their children with LDs during DE is one of the ways which may contribute to facing some obstacles.

How Different are the Teachers' Views on Ways to Confront DE Obstacles for Students with LDs Based the Studied Variables (academic degree, years of teaching experience, and number of courses attended on DE for students with LDs)?

Regarding to educational level, years of teaching experience, and number of courses offered on DE for LDs, the result was the absence of statistically significant differences in the average degrees of the teachers' views on ways to confront the highlighted obstacles. The absence of variation due to these variables might be explained by the fact that of the similarity in the characteristics of participating teachers, as 96% of them hold bachelor's degrees, 54% of them have more than 10 years of teaching experience, and 55% completed one to five courses on DE for LDs. The researchers tried to support this conclusion with previous studies, but there were limits in that no national study yet directly supports this result, except for Al-Salmi and Al-Makkawi (2020), who focused on studying the obstacles of DE from the viewpoints of teachers of deaf and hard-of-hearing students. However, other relevant research findings on DE during COVID-19 pandemic have indicated that the pandemic represents a huge shift that promote to descover different ways to confront DE obstacles regardless of the variation on teachers' charactrstics (Aslam et al., 2021a; Aslam et al., 2021b; Alsarawi, 2021; &Alshawish, 2020).

Limitations

Despite the importance of the results in this promising study, they are not without flaws that should be taken into consideration. For example, relying on distributing the questionnaire electronically and not distributing it in person may affect the number of responses. In addition to voluntary participation, only those who wanted to participate in filling out the questionnaire participated. Finally, the government directives issued to provide summer vacation led to the short time specified for the implementation of the study.

Recommendations for Practice

- Allocating one or two days per week for female LDs to attend school for the purposes of identification, evaluation, assessment, monitoring of progress, and training in motor and technical skills if needed.
- Establishing a department for DE within the Ministry of Education, its administration and its offices in all regions.
- Holding meetings for teachers and families of LDs to exchange information and experiences that may lead to addressing any relevant obstacles.
- Enhancing the engagement of teachers and families of LDs in decision-making regarding the educational process and suggesting possible solutions for DE at the level of the Ministry of Education.
- Organizing workshops to train teachers and students on necessary technical skills during DE.
- Focusing on strengthening efforts by making periodic awareness-raising for parents of LDs on how to create an educational environment at home that is free of any distractions.

Research Suggestion

Obstacles to DE for students with LDs are worthy of further investigation, and based on the current study, the researchers suggest addressing the following aspects in future research:

- Examining the obstacles to DE from the point of view of their families.
- Studying obstacles to DE from the point of view of students with LDs.
- Expanding the scope of the study by replicating the research topic and conducting a similar study with a different methodology or in different settings or different samples.
- Studying the reality of DE for LDs from the point of view of their teachers (pros and cons of DE).

Finally, DE in light of the Corona pandemic may continue beyond the pandemic. Therefore, the issue of DE for LDs still needs additional research. We hope that this study represents a prelude to future studies that enrich the local field and that the results will be used in future practice.

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