Mathematics Distance Learning and Learning Loss During COVID-19 Pandemic: Teachers' Perspectives

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This study aimed to assess the experience of teachers during the Learning Loss and the appropriateness of its content and to identify the mechanisms of confronting it from the mathematics teachers' perspectives in Oman. The sample consisted of (46) male and female teachers who were taught the learning loss of mathematics in public schools during the academic year 2021/2022. A questionnaire with three domains (Learning Loss Content, Teacher, and Mechanisms for Coping with Learning Loss) was adopted. The results showed that the degree of teachers' assessment of the learning loss experience came to a high degree. Besides, it showed that the experience of learning loss succeeded wildly among female teachers and achieved the necessary learning outcomes more than in male schools. It is recommended to take advantage of the current results in this study in preparing training programs for teachers to help them dealing with the difficulties that they faced by learning loss and conduct more studies dealing with the issue of learning loss in different samples and other stages.

Keywords: mathematics, learning loss, distance learning, COVID-19, mathematics teachers, middle school students

INTRODUCTION

The current coronavirus (Covid-19) pandemic affects people's health, but it is also affecting how they learn, work, and live. One of the most significant issues posed by Covid-19 is how to implement an educational system based on physical schools. At its peak, more than 188 countries, accounting for around (91%) of the world's enrolled students and stopped their schools to stop the virus from spreading. School closures significantly impact all kids, particularly the most vulnerable, who are more likely to confront additional challenges. According to the World Bank, poor people worldwide will rise to (130) million by 2020 (Tateno & Zoundi, 2021). Children and youth from low-income and single-parent families and immigrants, refugees, ethnic minorities, indigenous backgrounds, and those with special education needs

are denied physical learning opportunities, social and emotional support in schools, and extra services such as school meals. With the school doors shut, they risk falling further behind and becoming isolated. If countries do not make sufficient efforts to promote educational fairness and inclusion, these pupils are likely to suffer from the most in terms of educational outcomes and school assistance.

The term "Learning Loss" is frequently used to characterize losses in student's knowledge and skills. Historical data generally assessed through regular testing provides researchers with information about where student learning should be year over year. When the educational development is not made at the same rate as in prior years, it is called learning loss (Pier, et al., 2021).

These losses may translate to more significant long-term issues outside of the classroom. According to Currie and Thomas (2001), a (0.20) standard deviation (SD) fall in standardized test results can result in a (0.86%) decline in future employment probability. Furthermore, according to (Chetty, et al., 2014), raising student success by (0.20) SD leads to a (2.6%) rise in yearly lifetime wages (Maldonado & De Witte, 2020). Similarly, every additional year of education is connected with an increase in future wages of (8–9%) on average (Psacharopoulos & Patrinos, 2018).

While many studies have developed the learning-loss prediction models (Azevedo, et al., 2021), the official research and documentation of Covid-19 actual impact on student's learning progress are only now surfaced. As the global education system continues to be disrupted by pandemics, educators, policymakers, and researchers will benefit from a greater understanding of how school closures due to Covid-19 affect student's learning progress (Wardat et al., 2022).

Statement of the Problem

Education in Oman is one of the best educational systems in the world, as it plays a prominent role in the life and culture of society. To this end, the Ministry of Education in Oman has developed the educational systems and advanced national curricula that simulate the considerable explosion and remarkable development in the educational renaissance.

One of the most important advances in the educational systems is E-learning. It is considered the main principle of the educational development process and one of the effects of the knowledge economy , which is based on the dissemination and employment of knowledge in all fields, as it seeks to embody the principle of continuity in education and learning and allows the emergence of creativity and excellence in various educational fields, especially when the world faced coronavirus pandemic, which changed the course of teaching and learning in all global and educational systems and turned to electronic platforms. Hence, Oman was one of the first countries, like other countries, established educational platforms to ensure the continuity of education and learning. It began working hard to reach all students and achieve desired educational goals throughout Oman.

According to the United Nations (2020) report, more than 190 countries around the world were forced to stop attending schools for all students, who numbered nearly one and a half billion, and almost a third of these countries were able to switch to distance learning. The report finds that children are among the most prominent victims due to this pandemic because the reduction in the number of school days, the decrease in the duration of the class, the dispensation of some study materials, the decline of the content of some school curricula, and the disruption of students' social and psychological lives. As a result of separation from peers, daily communication, continuous play and energy emptying, this affected students negatively. Therefore, The Ministry of Education in partnership with the National School Development Program Unit delves into the experience of educational and enrichment loss in educational materials for the different academic levels for students, of which mathematics is one of its essential components, intending to compensate students for what they lost of information, knowledge, fundamental skills, and learning outcomes during the Corona pandemic, and raising what they possess of competencies and capabilities. Many teachers questioned the students' attendance during meetings and electronic tests, and the students' lack of commitment in distance learning and their seriousness about learning during the pandemic. Therefore, an urgent need has emerged to know the outcomes of the distance learning process and the extent to which students acquire the basic information, skills, and mathematical knowledge necessary to compensate students for what they have lost during the Corona pandemic. Based on the preceding, this

study came to assess the experience of learning loss and the appropriateness of its content and mechanisms to confront it from the teachers' point of view.

Research Questions

The problem of the current study was represented in the following questions:

1. *What is the appropriateness of the learning loss content from the teachers' point of view in Oman?*
2. *What is the level to which teachers evaluate the experience of learning loss in Oman?*
3. *Are there statistically significant differences at the significance level ($\alpha = 0.05$) between the mean of teachers' assessment scores for the experience of learning loss in Oman?*
4. *What are the mechanisms of coping with learning loss from teachers' point of view in Oman?*

The Significance of the Study

The study derives its importance from the significance of its subject as it deals with an essential dimension of the educational process through the assessment of learning loss experience from the teachers' point of view and the appropriateness of its content and mechanisms to confront it during the Corona pandemic and refer to the actual reality of distance learning, and thus knowledge of the main challenges resulting from the application of distance learning, which leads us to search and investigate about successful mechanisms to address these challenges, as this study is one of the very few studies that dealt with the learning loss resulting from the distance learning process in light of the Corona pandemic. This study also derives its significant as it is a prelude to the beginning of many studies about learning loss. It may define the general frameworks for some features on which educational systems and curricula can be built that simulate the significant progress and development in the educational renaissance in light of the Corona pandemic. It can also provide feedback for the Ministry of Education in Oman through the assessment of the experience learning loss.

Purpose of the Study

This study seeks to identify the reality of learning loss and the appropriateness of its content and mechanisms for confronting it from the teachers' point of view, their opinions, and perceptions in North Albatinha Governorate in Oman. This study also seeks to provide recommendations and suggestions that could have a significant role in evaluating teachers' experience of learning loss, the appropriateness of its content, and identifying mechanisms to confront it from the teachers' point of view.

Operational Definitions of Term

- **Distance Learning:** is a type of virtual learning based on students' interaction and employs information and communication technology, electronic networks, and intelligent devices in delivering information to students and coexisting with it electronically via the internet at any place and time.
- **Learning Loss:** the experience of Oman in compensating students for what they lost of information, knowledge, fundamental skills, and learning outcomes in mathematics during distance learning during the Corona pandemic, which represents the difference between what students learned during the regular school year and what they learned during the Corona pandemic.
- **Mechanisms to Confront Learning Loss:** are a set of necessary steps and preventive measures in Oman, represented by the Ministry of Education, to engage learning loss among students.
- **Learning Loss Content:** is the information, knowledge, and basic skills in mathematics that students lost during the Corona pandemic.

LITERATURE REVIEW

Haser, et al. (2022) conducted a study to explore how mathematics during the learning loss took place among Turkish middle school students during the COVID-19. Interviews with 19 public and 9 private

middle school mathematics teachers revealed some discrepancies in teaching approaches as well as existing inequalities between schools, classes, and students. Students' lack of engagement caused mathematics learning loss, teachers' limited use of methods to teach math.

Wahyudi (2021) conducted a study about the coronavirus (Covid-19) pandemic and its impact on people's health and how they learn, work, and live. One of the most significant issues posed by Covid-19 is how to implement an educational system based on physical schools. This study was carried out using qualitative descriptive research methods. This research intends to uncover the facts, phenomena, and situations that existed during the research process by describing what occurred during distant education learning activities. This burden falls on all parts of education, particularly the state, which is responsible for facilitating school continuity for all educational stakeholders to undertake distance learning. How could Indonesia plan for, prepare for, and overcome the Covid-19 recovery to minimize future educational losses?

Skar and Huebner (2021) conducted a study on the coronavirus pandemic 2019 (COVID-19). The researcher compared first-grade Norwegian students' writing quality, handwriting fluency, and attitude toward writing during the COVID-19 pandemic (421 girls, 396 boys), which included emergency remote instruction for nearly 7 weeks, to first-grade students in the same schools a year before the pandemic began (421 girls, 396 boys) (835 girls, 801 boys). The results showed that the pupils in first-grade during the pandemic had not satisfactory performance in writing skills.

Donnelly and Patrinos (2021) conducted a study about the learning loss. The researchers conducted a detailed study of recorded learning loss evidence between March 2020 and March 2021. This systematic review aims to compile existing data and record what has been published in the literature. Because of the novelty of the topic, eight studies were uncovered; seven indicated evidence of student learning loss in at least some of the participants, while one of the seven also found evidence of learning gains in a specific subgroup. The participants in the remaining studies showed improved learning gains. In addition, four of the studies found an increase in inequity, with particular demographics of students suffering more significant learning losses than others. It has been decided that further research is required to expand the number of studies produced, their geographic scope, and the number of students seen.

Schult, et al. (2021) conducted a study titled to find out the effect of COVID-19 pandemic on students' performance. The current study uses large-scale assessment findings in reading and mathematics from annual required assessments in September to look into the skills of fifth-grade competence scores. Low-achieving readers were able to reach pre-pandemic levels of competence. Low-achieving kids appear to have a learning backlog in mathematics that should be addressed in future instruction. The average socio-cultural capital of the school and the number of pupils with a migration history performed a minimal influence in moderating the learning loss in the schools. Nonetheless, less socio-cultural capital was linked to a more significant learning loss in mathematics.

METHODOLOGY

The current study followed the descriptive-analytical approach, which depends on studying the phenomenon, describing it, explaining it and determining its circumstances.

Population and Sample

The study population consisted of teachers of mathematics who taught the learning loss in public schools affiliated with the Ministry of Education in North Albatinha Governorate in Oman during academic year 2021/2022. The participants of the study were (46) male and female teachers who were selected from public schools in North Albatinha Governorate in Oman. Table (1) shows the distribution of study sample.

TABLE 1
DISTRIBUTION OF STUDY SAMPLE

Gender	Number	Percentage
Male	19	41.3%
Female	27	58.7%
Total	46	100%

Instrument of the Study

By reviewing the theoretical and related literature and looking at some measures of learning loss in mathematics (Donnelly & Patrinos, 2021; Wahyudi, 2021; Haser, et al., 2022). The learning loss questionnaire was prepared to achieve the purpose of the study. It consisted of three domains (Content of Learning Loss, Teachers, Mechanisms for Coping with Learning Loss). Each domain has (8, 8, 9) items, respectively. The participants' responses according to the questionnaire were classified into a 5-Point Likert Scale (Strongly Agree (5), Agree (4), Undecided (3), Disagree (2), and Strongly Disagree (1). Thus, to analyze the participants' responses, the researchers used the following ranks for the analysis (1– ≤ 2,33 low, >2,34– ≤ 3,67 moderate, and >3,68– 5 high).

To verify the validity of the questionnaire, it was presented to a group of arbitrators from university professors specializing in educational psychology, measurement and assessment, mathematics curricula and teaching methods. They were asked to express their opinions and observations about the tool items and their suitability for the objectives for which it was set and the integrity of the linguistic formulation, and its affiliation with the fields they study. Based on the arbitrators' opinions, the amendments were made until the scale became finalized.

To verify the reliability of the questionnaire, it was applied to an exploratory sample consisting of (20) male and female teachers from the population of the study and out of the study sample. The Cronbach Alpha coefficient was calculated to measure the items of questionnaire. Table (2) shows Cronbach's Alpha coefficient for each item of the questionnaire.

TABLE 2
CRONBACH'S ALPHA COEFFICIENT FOR EACH OF THE QUESTIONNAIRE ITEMS

Items	Cronbach's Alpha coefficient	Items	Cronbach's Alpha coefficient	Items	Cronbach's Alpha coefficient
1	0.795	9	0.802	17	0.836
2	0.821	10	0.813	18	0.819
3	0.806	11	0.835	19	0.835
4	0.775	12	0.827	20	0.882
5	0.869	13	0.792	21	0.807
6	0.857	14	0.839	22	0.782
7	0.816	15	0.842	23	0.869
8	0.792	16	0.865	24	0.854
				25	0.786

Also, Cronbach's Alpha coefficient was calculated for each of the three domains of the questionnaire. Table (3) illustrates this.

TABLE 3
CRONBACH'S ALPHA COEFFICIENT FOR EACH DOMAINS OF THE QUESTIONNAIRE

Domains	Items	Cronbach's Alpha Coefficient
Learning Loss Content	8	0.897
Teachers	8	0.923
Mechanisms of Coping with learning Loss	9	0.868
Total	**25**	**0.906**

It can be seen from Table (3) that the questionnaire has a high reliability for each domain of it, located between (0.868 - 0.923). This means that the questionnaire is suitable for the purposes of the study. These values confirm that the tool has stability indications that allow it to be used for the study's purposes, enhancing the accuracy of the tool and its suitability for application to achieve the purposes of the study.

Procedures of the Study

- The theoretical and research literature related to the subject of the study were reviewed and used in preparing the study instrument.
- The study population was identified and sampled from the male and female teachers of learning loss in mathematics in public schools affiliated with the Ministry of Education in North Albatinha Governorate during the academic year 2021/2022.
- The study instrument was prepared in its initial form, reviewed and verified for validity and reliability, and then reformulated and modified based on the jury's comments.
- The study instrument was applied to an exploratory sample selected from the population of the study and out of the study sample. The questionnaire was applied to the study sample (46) male and female teachers.
- The results were analyzed using the SPSS program to answer the questions of the study and compare them with the results of previous studies.

Statistical Processing

To analyze the data, the SPSS program was used by extracting the means and standard deviations of the scores for each item of the questionnaire and the scale as a whole. The t-test was also used to detect the differences between the means in the response of the study participants.

RESULTS

Results Related to the First Question: What Is the Appropriateness of the Learning Loss Content from the Teachers' Point of View in Oman?

The means and standard deviations of the participants' perspectives were calculated for the first domain (Learning Loss Content). Table (4) shows the results.

TABLE 4
MEAN AND STANDARD DEVIATIONS FOR THE LEARNING LOSS CONTENT DOMAIN

No.	Item	Mean	S.D.	Level of Learning Loss
1	The learning loss subject included all the issues of the curriculum	3.26	0.52	Medium
2	The learning loss course focused on topics that were not addressed during distance learning	3.55	0.58	Medium
3	The learning loss course develops students' ability to think critically	3.95	0.62	High
4	The learning loss of material increases mathematical skills	4.19	0.70	High
5	The learning loss material included the use of learning strategies	3.55	0.58	Medium
6	Topics of learning loss commensurate with the level of students	3.99	0.63	High
7	The learning loss course focused on the cognitive, skill, and behavioral aspects of the students	4.18	0.69	High
8	The material on learning loss was presented to students in a clear and simplified manner	3.70	0.57	High
Overall		**3.78**	**0.56**	**High**

It appears from Table (4) that the level of the learning loss content domain was high, as it reached the mean score of (3.78) and a standard deviation of (0.56). Item (4) "The learning loss of material increases mathematical skills" came in the first rank, with a mean score of (4.19) and a standard deviation of (0.70). In contrast, item (1) "The learning loss subject included all the issues of the curriculum" came in the last rank, with a mean score of (3.26) and a standard deviation of (0.52).

Results Related to the Second Question: What Is the Degree to Which Teacher Evaluate the Experience of Learning Loss in Oman?

The means and standard deviations of the participants' perspectives were calculated for the teacher second domain. Table (5) shows the results.

TABLE 5
MEAN AND STANDARD DEVIATIONS FOR TEACHERS DOMAIN

No.	Item	Mean	S.D.	Level of Learning Loss
9	The students paid more attention to the curricula scheduled during the academic year than to the learning wastage loss	3.97	0.61	High
10	The learning loss material included all the topics students lost during the Corona pandemic	3.09	0.51	Medium

11	The teacher bears additional classes to provide the learning loss material in addition to the classes scheduled for the teacher during the school year	3.88	0.57		High
12	The Ministry of Education provides a guide for teachers regarding learning loss	3.88	0.57	High	
13	Parents of students are concerned about the commitment of their children to attend the classes designated for the subject of learning loss	4.11	0.64	High	
14	The time given to submit the lost educational material was insufficient	3.89	0.53	High	
15	The Ministry of Education has taken care of supervising the process of the learning loss experience	2.29	0.47		Low
16	The school administration worked to provide an appropriate study environment for the teacher and student during the learning loss period	3.67	0.62	High	
Overall		**3.61**	**0.63**	**High**	

It appears from Table (5) that the level of teachers' assessment of the learning loss experience was high, with a mean score of (3.61) and a standard deviation of (0.63), Item (13) "Parents of students are concerned about the commitment of their children to attend the classes designated for the subject of learning loss" came in the first place, with a mean score of (4.11) and a standard deviation of (0.64). In contrast, the last item (15) "The Ministry of Education was interested in supervising the process of the learning loss experience" came in the last place, with a mean score of (2.29) and a standard deviation of (0.47) .

Results Related to the Third Question: Are There Statistically Significant Differences at the Significance Level (α = 0.05) Between the Means of Teachers' Assessment Scores for the Experience of Learning Loss in Oman?

To answer this question, the t-test was used to determine the statistically significant differences at the level of significance (α = 0.05) in the response of the study participants. Table (6) shows the results.

TABLE 6
RESULTS OF THE T-TEST

Domain	Gender	Number	Mean	S.D.	d.f.	T	Sig.
Learning Loss Content	Male	19	3.79	0.54	44	-0.99	0.251
	Female	27	3.95	0.59			
Teacher	Male	19	3.58	0.51	44	-1.63	0.458
	Female	27	3.89	0.58			
Mechanisms of Coping with Learning Loss	Male	19	3.71	0.55	44	-1.16	0.529
	Female	27	3.91	0.59			
Overall	Male	19	3.68	0.52	44	-1.48	0.324
	Female	27	3.98	0.62			

$t_{(0.975,44)} = 1.684, \quad \alpha = 0.05$

Table (6) shows that there are statistically significant differences at the level of significance ($\alpha = 0.05$) between the means of teachers' assessment of the learning loss experience for all three domains of the questionnaire and for the scale as a whole. This indicates that the learning loss experience, focused on several aspects, essential information, and skills in mathematics has succeeded dramatically from teachers' point of view in Oman.

Results Related to the Fourth Question: What Are the Mechanisms of Coping with Educational Loss from Teachers' Point of View in Oman?

The means and standard deviations of the participants' perspectives were calculated for the third domain (mechanisms of coping with learning loss). Table (7) shows the results.

TABLE 7
MEAN AND STANDARD DEVIATIONS FOR MECHANISMS OF COPING WITH LEARNING LOSS DOMAIN

No.	Item	Mean	S.D.	Level of Learning Loss
17	The role of the teacher in the school was transferred to the parents at home during the period of learning loss, which caused the family other additional burdens	3.15	0.49	Medium
18	Learning loss motivates students to self-learn and thus learn permanence in exceptional circumstances	3.32	0.46	Medium
19	The appearance of recklessness or lack of interest in learning loss on the part of students	4.25	0.69	High
20	The social conditions of the family impede the follow-up of students' learning during the period of learning loss	3.74	0.46	High
21	The family's conviction that learning loss constitutes an additional burden for them	4.06	0.62	High
22	Parents' lack of experience in intensive teaching within a short period and their lack of experience made it difficult to follow up on their children's students	4.12	0.64	High
23	The learning loss limits the progress of the educational process at the expense of the slowness in the course	3.98	0.61	High
24	The students showed a significant improvement in the basic mathematical skills that they lost during the pandemic during the learning loss period	3.99	0.61	High
25	The learning loss showed a significant disparity between teachers in their seriousness in the teaching and assessment processes	3.88	0.58	High
Overall		**4.07**	**0.62**	**High**

It appears from Table (7) that the level of mechanisms of coping with learning loss domain was high, with a mean score of (4.07) and a standard deviation of (0.62). Item (19) "The appearance of recklessness or lack of interest in learning loss on the part of students" came in the first place, with a mean score of (4.25) and a standard deviation of (0.69). In contrast, item (17) "The role of the teacher in the school was transferred to the parents at home during the period of learning loss, which caused the family other additional burdens" came in the last rank with a mean score of (3.15) and a standard deviation of (0.49).

DISCUSSION

Discussing the Results of the First Question: What Extent Is the Content of Learning Loss Appropriate from Teachers' Point of View in Oman?

The results related to the level of appropriateness of the learning loss content from the teachers' point of view in Oman show that it was high, and this indicates that the level of focus of the learning loss content on students' acquisition of information, basic knowledge and skills. The necessary mathematics as a difficulty facing teachers, even though the subject of learning loss works to develop the cognitive, skill and behavioral aspects of students and develops the talent of critical thinking. It was presented clearly and included various activities, exercises, and exercises commensurate with the level of students. Moreover, the subject of learning loss was presented through some strategies. Teaching methods are compatible with students' needs, as indicated by previous studies (Tashtoush, et al., 2022 a; Fannakhosrowet, et al., 2022; Schult, et al., 2021; Tashtoush, et al., 2020 a). The prolonged interruption in the educational process during the Corona pandemic resulted in educational, psychological, and moral dangers, and social roles played a negative role in widening the educational gap, as students lost their right to education, classroom interaction, learning from their peers, unloading their energies, and, most importantly, preventing them from accessing the hidden curriculum that would otherwise be available to them. The learning loss material was very suitable from the teachers' point of view for all the basic mathematical skills that students lost during the Corona pandemic, in addition to the teachers' satisfaction with its good content that came to meet the needs and interests of students (Aloufi et al., 2021).

Discussing the Results of the Second Question: What Is the Level to Which Teachers Evaluate the Experience of Learning Loss in Oman?

The results related to the level of teachers' assessment of the learning loss experience in Oman show that it came to a high level. This indicates the keenness and interest of the Ministry of Education to compensate students for what they lost during the Corona pandemic of information and skills basic and learning outcomes in mathematics, and this is evident in the Ministry of Education's interest in supervising the process of the educational loss experience in schools and providing an appropriate study environment for teachers and students. Which students lost during the Corona pandemic, so the guide included the best teaching methods and strategies with a sound effect that can be relied upon in teaching during the period of educational loss experience, and this was indicated by many previous studies (Rahim, 2017; Tashtoush, et al., 2022 b; Rasheed & Tashtoush, 2021; Donnelly & Patrinos, 2021; Wahyudi, 2021; Tashtoush, et al., 2020 b). The teachers also believe that the keenness and interest of the students' parents to the commitment of their children to attend the classes allocated to the subject of educational loss came to a high degree. The learning they lost during the Corona pandemic. In addition, to the full conviction of teachers of the importance of education and to compensate students for what they lost during the Corona pandemic, despite some of the obstacles they faced, namely that the time allotted for the provision of lost educational material may have been insufficient, and despite their bearing additional teaching burdens represented by increasing the number of classes during the simultaneous presentation of the learning loss.

Discussing the Results of the Third Question: Are There Statistically Significant Differences at the Level of Significance (α = 0.05) Between the Means of Teachers' Assessment Scores for the Experience of Learning Loss in Oman?

The results show that there are statistically significant differences at the significance level (α = 0.05) in the teachers' assessment of the learning loss experience for its three domains in favor of females. This may be attributed to several factors that the learning environment and motivation make females more enjoyable while they teach than males.. In addition, to the fact that females are more disciplined in adhering to the educational system and instructions in female schools is better than that of males' schools. Due to females' high ability and efficiency in completing the tasks, duties entrusted to them and their possession of motor skills and teaching and learning methods are more effective than males. This indicates that the learning loss experience focused on several aspects and basic skills in mathematics had a more significant positive impact on female teachers represented in achieving tremendous success in female schools and achieving the necessary learning outcomes than in male schools.

Discussing the Results of the Fourth Question: What Are the Mechanisms of Confronting Learning Loss from the Point of View of Teachers in Oman?

The results show that the level of mechanisms for coping with learning loss from the teachers' point of view in Oman was high. This indicates that students still need to provide more awareness, guidance and counseling by paying attention to the learning lost content and not neglecting the importance of education and its role in educating individuals in society and the ability to distinguish between right and wrong, in addition to improving the quality of life of individuals and organizations and to develop critical thinking, observation and problem solving skills, which is the thinking pattern required by the experience of the learning loss to obtain tangible improvement and progress in acquiring basic mathematical skills that they lost during the Corona pandemic, and also motivate them to self-learning to reach an understanding of the information individually without the help of the guardian or the family in general, and thus the permanence of motivation and learning even in exceptional circumstances, which leads to alleviating the additional burdens on families represented in transferring the role of the teacher in the school to parents at home during the learning loss experience. Perhaps most families do not have the appropriate expertise or sufficient time in the process of intensive teaching within a short period, and the poor ability of parents to assume the responsibility placed upon them in trying to balance teaching the content of learning loss and the course at the same time may. It was also a great difficulty, especially the large number of students or children in these families. The teachers also showed that teaching through the experience of learning loss contributes to increasing their motivation towards developing their teaching skills and relying on teaching methods and methods that motivate students and increase their motivation. This result is consistent with what was indicated by many previous studies (Fannakhosrow, et al., 2022; Donnelly & Patrinos, 2021; Tashtoush, et al., 2022 b; Wahyudi, 2021; Rasheed & Tashtoush, 2021, Tashtoush, et al., 2020 a).

RECOMMENDATIONS

Based on the results reached during this study and in light of the great success achieved by the learning loss experience, the researchers see that the education sector is one of the most prominent sectors contributing to the national economy development. In light of the vast technological revolution that has become a basis in education, the study recommends the following:

- Preparing a matrix of concepts, knowledge, skills, and primary products to which students do not rise normally and analyze the educational content to find out the educational material in which the learning loss occurred.
- Preparing and applying a diagnostic test to identify and analyze educational loss to determine the extent to which students possess basic concepts, skills, and knowledge.
- Avoiding the combination of old learning losses resulting from students dropping out of school and new learning because this combination can confuse students and teachers during learning loss.

- Benefiting from the results of the current study in preparing training programs for teachers to face the difficulties faced by learning loss and conducting more studies dealing with the issue of learning loss on various samples and other stages.

Limitations of the Study

- **Human Limits:** the current study was limited to teachers of mathematics who were taught the learning loss in public schools affiliated with the Ministry of Education in North Albatinha Governorate in Oman.
- **Time Limits:** This study was implemented during the academic year of 2021/2022.
- **Spatial Boundaries:** This study was limited to public schools affiliated with the Ministry of Education in North Albatinha Governorate in Oman.
- **Objective limits:** This study was limited in evaluating teachers' experience of learning loss and the appropriateness of its content and mechanisms to confront it from the teachers' point of view.
- This study is determined by its instrument and the psychometric properties of validity and reliability of it.

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