
| RESEARCH ARTICLE

The Degree of Success of the Educational Loss Plan and the Obstacles to their Implementation from the Point of View of Science Teachers

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| ABSTRACT

The study aimed to determine the degree of success of the educational loss plan and the Impediments to its implementation from the point of a science teacher's view. The study followed the descriptive-survey method, the study sample Included (79) science teachers for the basic stage in (Marka) district in Jordan. The study tool was a questionnaire consisting of two parts, the first to determine the degree of success of the plan, and it consisted of (27) items. The second section reveals the Impediments facing science teachers in applying the plan, and it consists of (15) paragraphs, the results showed that the degree of success of the plan and the Impediments to their implementation was moderate. The results indicated that there were no statistically significant differences in the degree of success of the plan and the Impediments to their implementation due to the variables of "gender and experience". The study recommends the need to provide training courses and programs that increase teachers' skills to deal with the plan based on basic skills.

| KEYWORDS

Educational Loss Plan, Obstacles to Implementation, Science Teachers.

| ARTICLE INFORMATION

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Introduction

The coronavirus pandemic has cast its shadow over all aspects of life, and left a clear impact on the education sector, as the elements associated with the educational process, including teachers, learners, and parents, were affected. It was necessary to compensate the learner for the knowledge he lost at this stage, by preparing plans to compensate for the learning he lost during the interruption of study and the loss of face-to-face learning, as educational loss is one of the most prominent problems facing the educational system, as the educational loss that occurred due to the Corona pandemic led to an imbalance in the functional balance of the educational process, especially between what the student learned and what he should learn. Educational loss is a term that refers to the effort, money, and time spent on education without reaching the expected outcomes, due to learners not continuing their educational progress, either due to dropping out of schools, or due to the inability to succeed, or for educational reasons, as the teacher's preparation process and knowledge of educational materials, his teaching ambition, and his methods of dealing with learners are considered one of the reasons for the educational loss, in addition to the impact of the relationship between learners and teachers due to its great importance on the level of educational loss, especially those who suffer from academic achievement obstacles (Ibn Saeed, 2021).

It is not possible to consider educational loss as a modern crisis in the education sector, but rather it is one of the oldest conflicts and challenges facing the education sector all over the world as a result of the spread of many conditions related to poverty, the lack of sufficient budgets for education, scarcity of resources, and wars. Due to the global spread of the Corona pandemic, the problem of educational loss has returned, and the McKinsey report stated that global economic losses are expected

to reach about \$ 16 trillion annually by 2040, as a result of incomplete education or educational loss caused by the Corona crisis (Hargreaves & Shirley, 2019).

Literature

The UNICEF report (UNICEF, 2022) confirms that school closures have caused significant damage to student learning and that damage will remain for decades to come without remedial action. According to the estimates indicated in the report, a primary school student who lost one year of schooling during the pandemic may lose three years of learning in the long term if urgent action is not taken. The report indicates that low- and middle-income countries, and students from lower socio-economic backgrounds are the most affected and had less or no use of technology during the closure, so they need intensive support to get back on track in learning, and teachers need the training and resources necessary to implement remedial plans. A report by the Annie Casey Foundation (2024) indicates that the decline in learning between (2019-2022) is equivalent to decades of educational progress in America. The report shows that the most prominent effects of the educational disruption were the transition to distance learning, which means reducing actual teaching time, the impact on students' mental health, as they became increasingly isolated, and the modification of curricula, as teachers were asked to redesign lessons due to limited teaching time, and the suspension of extracurricular activities. The report recommends the need to expand the scope of intensive teaching, and private lessons, increase spending in the education sector, find solutions to the problem of chronic absence, and provide comprehensive support for students and families. The World Bank report (World Bank, 2023) confirms that school closures have led to significant losses in student learning, and that there is a direct relationship between the length of the closure period and educational loss. In schools that were affected for more than eight weeks, actual achievement decreased by about (34) points, equivalent to more than a full academic year, and in schools that were affected for less than two weeks, academic achievement decreased by about (13) points, equivalent to a third of half a school year. The report recommends accelerating the educational recovery process through carefully designed policy initiatives and increasing spending on the education sector. A research study conducted in (2023) by the Center for Education Policy Research at Harvard University and the Center for Educational Opportunity at Stanford University recommended the need to pay attention to policies to address educational loss and create opportunities for students to learn outside the school context, such as providing academic content in summer camps and after-school programs. It also recommended adding an optional academic year for students (Center of Education Policy Research, 2023). In Jordan, the learning loss plan, also known as the "learning based on basic concepts and outcomes" plan, came in an attempt to bridge the gap between learners and basic educational skills. The Ministry of Education sought to achieve several goals by implementing this plan in its schools, most notably compensating for educational interruption. The learning loss plan focused on four basic subjects: Arabic, English, mathematics, and science. The idea of the plan is based on standardizing teaching by stating the basic joints in these four subjects, and condensing questions and exercises and sorting them into special notebooks (Al-Daghimi, 2021). Teachers bore the greatest burden in the learning loss plan because they are its main implementer. The Jordanian Ministry of Education relied on teachers' previous teaching experiences (Al-Mustarihi, 2022). Effective teachers are a key part of supporting educational recovery, but school closures during the pandemic have left teachers feeling uncertain about their role, anxious about their working conditions, health, and safety, many unable to use technology, and unprepared for the challenges of classrooms when schools reopen and how to support students when they return to the classroom (Page, et al. 2021).

Due to the pandemic, teachers had to spend more time at home, practicing the profession of teaching remotely through various educational platforms, which increased their reliance on technology and its applications and developed their skills in using it in teaching, and perhaps this is one of the benefits of the pandemic (Koparan & Bekalp, 2020), but they also had to support students' learning and well-being with teaching and assessment methods different from face-to-face learning, regardless of their ability to do so, and deal with the social and psychological difficulties of students and themselves as well, and there is no doubt that many teachers lacked experience in teaching remotely, and were not prepared for it, so they need support by training them and developing their skills to implement treatment plans in the desired manner (Baysal, et al., 2023). Despite the great benefits expected from implementing educational loss plans in improving the educational process, the reality of implementation faces a number of obstacles and challenges that prevent its implementation as required. Obstacles vary, such as human obstacles, as the lack of adequate training of teachers on how to design educational and assessment activities, and the lack of acceptance of some teachers of the idea of educational loss leads to difficulty in implementation, in addition to organizational obstacles, including the density of the content of the educational loss plan, the difficulty of achieving a balance between the content and the goals of the plan, the lack of clear educational policies that support the implementation process, weak support from school administrations, material obstacles, including limited resources and innovative educational materials, lack of electronic infrastructure, and obstacles related to evaluation, including the absence of effective evaluation tools to measure the level of student progress (Guthrie, 2023). In the science subject in particular, the educational loss plan represents a qualitative step towards education based on critical thinking and exploration. The science subject relies on many interconnected concepts that cover broad fields, such as physics, chemistry, and biology, which requires those responsible for the educational process to enhance learners' ability to understand and comprehend these concepts in an integrated manner that enables them to solve educational problems and explain natural phenomena. Through the plan, learning of the science subject is improved, by designing educational and teaching activities that

contribute to enabling learners to achieve clear learning outcomes, such as developing analytical thinking, the ability to conduct experiments, and linking knowledge to different life situations (Al-Balushi, 2022). Teaching science is not without difficulties due to the abstractness and complexity of scientific concepts, which is why students face challenges when reading science texts, as they usually contain unfamiliar concepts and sentences that are difficult to understand (Dori et al., 2018). Moreover, their learning motivation plays an important role in learning scientific concepts (Wentzel & Miele, 2016). Therefore, teaching science requires qualified teachers who are able to link scientific knowledge to educational methods that enable students to build scientific knowledge correctly and effectively, as well as to use it in solving problems and making decisions (McConnell, 2017). Therefore, teachers need more training, qualification, and professional and educational support to implement remedial plans for learning loss. Ofsted (2020) shows that one of the risks of remedial plans for learning loss is that schools focus on specific subjects, believing that they are the most important for students, as the focus is often on reading and mathematics, with little focus on science. This is worrying. Since students' attitudes towards science and their scientific identity are largely formed at the end of the basic education stage, treatment plans must focus on scientific subjects to shape students' vision of science and its role in their lives.

Previous studies:

Given the importance of the topic of educational loss, many researchers have shed light on it by conducting scientific research, such as the study of Abu Nab (2024), which sought to evaluate educational loss in the subject of mathematics. The study adopted the descriptive analytical approach, and the study tool was represented by three tests in the remedial materials prescribed by the Ministry of Education for the grades "fourth, fifth and sixth", which were distributed to (682) male and female students randomly. The results showed that the percentage of educational loss reached (42%), in addition to the fact that the remedial material contributed to reducing educational loss by (29%). Al-Shahumi and Al-Hadabi (2024) studied educational loss in the Sultanate of Oman in light of the coronavirus pandemic (COVID-19), in terms of clarifying the roles of school principals, teachers and parents in making up for educational loss, and identifying the obstacles and challenges they faced by conducting interviews with (15) school principals and (49) male and female teachers. The results showed the students' weak mastery of basic knowledge and skills in basic subjects, and the loss of some of them in learning skills such as (teamwork, communication, critical thinking, and problem solving). The most important procedures followed to address the loss are: enrichment classes - effective teaching strategies - activities and tests - and psychological and social support for students. Among the challenges facing educational loss are the weakness of the digital infrastructure of schools, and challenges related to parents, students, and curricula. Arenas and Gortazar (2024) conducted a study in Spain to determine the impact of educational loss in the Basque region after a year of school closures. The results showed that the impact of educational interruption in the region was six months and that the greatest impact was in mathematics, and that the impact in public schools was greater than in private schools, and that social and economic differences in the region affected the extent of the educational loss. In Jordan, Al-Bari (2024) investigated the degree of satisfaction of Arabic language teachers with the experience of educational loss in the Mafraq Governorate. He used the descriptive survey method, and the study was applied to (197) teachers. The results indicated that the degree of teachers' satisfaction was average. The study also showed statistically significant differences in relation to years of experience and no differences in relation to gender and academic qualification.

Betthausen et al. (2023) conducted a meta-analysis of studies that investigated the impact of the Covid (19) pandemic on education. The results of (42) studies from (15) countries were analyzed. The results of the meta-analysis revealed a significant learning deficit, with the deficit being greater among children from low socio-economic backgrounds, and the deficit being greater in mathematics than other subjects, especially in low- and middle-income countries. As for the study by Jakubowski et al. (2023), investigated the global educational loss in student achievement due to Covid (19), and its results revealed that the educational loss is equivalent to more than one academic year, and the loss is greater the longer the school closure period, and that low-achieving students were exposed to greater educational losses, and these losses may affect a decrease in the growth of the countries' GDP by an amount of (0.68). Al-Balushi's study (2022) investigated the problems in the field of education that increase the level of educational loss in the State of Kuwait. For this purpose, the descriptive survey approach was used, as the questionnaire was applied to a sample of ninth-grade science teachers, numbering (40). The results of the study showed that the overall score was high, in addition to the absence of significant differences between the sample's estimates in evaluating the science book, attributed to experience, academic qualification, or gender of the teacher. Hazaimah (2022) evaluated the experience of the first grades regarding the experience of educational loss. The study adopted the descriptive survey approach, and the sample consisted of (200) female teachers from the first basic stage. The results showed that the evaluation of the experience of educational loss was moderate, in addition to the absence of an effect attributed to the variables of academic qualification and years of experience. Engzell et al. (2021) conducted a study to determine the extent of educational loss in primary schools in the Netherlands due to the Corona pandemic. The results revealed that despite the short closure of Dutch schools (8 weeks), and despite the fair funding of schools, the loss of education amounted to three percentage points, equivalent to one-fifth of the school year. Samuel (2017) conducted a study aimed at investigating the causes affecting the occurrence of educational loss in Kenya. To achieve this, a sample of (81) principals, teachers, and learners was interviewed. The results of the study revealed that the most prominent causes

of educational loss are: the school itself, the home environment, and factors related to the learner himself. While the study of Deribe et al. (2015) investigated the extent of educational loss in primary schools in Ethiopia, and the reasons for its occurrence. The study was applied to (5) schools, and the sample consisted of (280) students and (46) teachers. The results showed that the extent of educational loss in those schools was average, and that the most prominent reasons for educational loss were social and economic aspects. By following previous related studies, especially at the national level, it was noted that there was little research that studied the subject of educational loss in science teaching, due to the novelty of the subject. Accordingly, there is an importance in conducting research studies to evaluate the degree of success of the educational loss plan, and the obstacles to its implementation from the point of view of the teachers themselves.

The problem of studying and its questions

The damage caused by the Corona pandemic was not limited to the economic side in the world, but rather it affected all sectors to varying degrees, most notably the education sector, as the first stage of the outbreak of this epidemic led to the disruption of learning and its cessation for a period of time, which caused damage to the learning process, and it was necessary to search for solutions that contribute to the continuity of study, as distance learning replaced face-to-face education, and accordingly this phenomenon emerged in most countries of the world, and the Ministry of Education has moved to compensate for the educational interruption by introducing many educational plans and programs that were prepared specifically for this, and the educational loss plan is one of the most important programs that have been activated in Jordanian schools after the Corona pandemic, as this program focuses on enabling learners to understand concepts and knowledge and apply them in all educational situations. Despite the importance of the learning loss implementation plan, its success requires conducting scientific studies to evaluate its degree of success from the point of view of the most important elements of its implementation, i.e. the teacher, and to investigate the obstacles faced by its implementation in teaching science, as many studies have indicated that learning loss plans have faced many challenges, some of which are related to the lack of teacher qualifications, the weakness of the necessary infrastructure, and others (Al-Salem, 2021), and that science teachers often face difficulties in implementing learning loss plans due to multiple factors, such as the lack of educational resources, the pressure resulting from intensive curricula, and the lack of familiarity with new teaching methods (König et al., 2019; Fullan, 2020). In addition, teachers' positive attitudes towards this approach may collide with realistic challenges, such as weak support for educational policies (Hattie, 2019).

Hence, the study came to investigate the answer to the main question: "What is the degree of success of the educational loss plan and the obstacles to its implementation from the point of view of science teachers?", and the following questions emerged from this question:

1. What is the degree of success of the educational loss plan from the point of view of science teachers in Jordan?
2. What are the obstacles facing science teachers in implementing the educational loss plan from their point of view?
3. Are there statistically significant differences at the level ($\alpha=0.05$) in the degree of success of the educational loss plan attributed to the variables (gender, years of experience)?
4. Are there statistically significant differences at the level ($\alpha=0.05$) in the obstacles facing science teachers in implementing the educational loss plan attributed to the variables (gender, years of experience)?

The importance of the study

The current study has theoretical importance in that it provides a cognitive dimension related to the educational loss plan and the obstacles to its implementation. As for the practical importance of the study, it lies in informing decision-makers and specialists about the success of the educational loss plan, and knowing the difficulties and obstacles that limit its implementation in teaching science.

Study terms and procedural definitions:

Educational loss: is "an educational approach that focuses on enabling learners to understand the major concepts in a specific field and linking them to clear and measurable educational outcomes. This approach aims to enhance deep thinking and develop skills for applying knowledge in real-life situations, instead of being satisfied with mechanical memorization or superficial knowledge. It is characterized by its focus on the integration of knowledge, skills and values, which enhances learners' abilities to analyze and criticize" (Ministry of Education, 2021: 5).

Implementation barriers: are: "obstacles or challenges that prevent the effective implementation of programs or plans and the achievement of the desired goals in the educational field. They are defined as the difficulties that individuals face due to the presence of internal or external factors, such as lack of resources, poor training, resistance to change, or lack of institutional

support" (Hargreaves & Shirley, 2019: 26). The degree of success of the plan and the obstacles to its implementation were measured based on the responses of science teachers to the study tool prepared for this purpose.

Study Limits:

- Human Limits: The study was limited to science teachers.
- Spatial Limits: It was represented by government schools in Marka District affiliated to the Jordanian Ministry of Education.
- Temporal Limits: It was limited to the first semester of the 2024/2025 academic year.
- Objective Limits: The study was limited to knowing the degree of success of the educational loss plan, and the obstacles to its implementation.

Study Limitations:

The results are determined by the psychometric characteristics of the study tool used, and the objectivity of the respondents.

Method and Procedures

Study Approach

The study followed the descriptive survey approach to achieve its objectives.

Study community and sample

The study community consisted of (241) male and female science teachers in Marka District in Jordan. The sample consisted of (79) male and female teachers, representing (33%) of the study community. The study tool was distributed to the sample using the available sample method electronically.

Study Tool

The study tool, which is a questionnaire, was prepared after referring to educational literature and previous studies, such as the Al-Afishat study (2023) and the Al-Balushi study (2022). The questionnaire consisted of two sections: the first to determine the degree of success of the educational loss plan, and included (27) paragraphs distributed over three dimensions: (the cognitive aspect, the emotional aspect, and the skill aspect), and the second section to reveal the obstacles facing science teachers in implementing the learning plan, and consisted of (15) paragraphs.

Validity of the study tool

For the purposes of validity, the opinion of (10) arbitrators who are specialists in curricula and methods of teaching science were taken, in addition to a number of teachers and supervisors from the science specialization, and their opinion was taken on the paragraphs of the questionnaire, and the arbitrators approved the tool as is, with some minor modifications, while no paragraphs of the questionnaire were added or deleted.

Tool stability

To verify the tool's stability, it was applied and reapplied on paper to a selected survey sample of science teachers, consisting of (12) male and female teachers who were not participating in the study, with a time interval of two weeks, and stability was calculated using Pearson's correlation coefficient, which reached (0.84), and this value is indicative of the tool's stability.

Study procedures

To achieve the study objectives, the following procedures and steps were followed:

- Reviewing the literature related to the study topic "Educational Loss Plan".
- Developing the current study tool, formulating its paragraphs in their initial form, and verifying the indications of validity and stability.
- Distributing the questionnaire randomly to the sample electronically.
- Analyzing teachers' answers statistically, and presenting the results.

- Discussing the results obtained, and providing appropriate recommendations in light of them.

Statistical processing:

To answer the study questions, arithmetic means and standard deviations were calculated, and a two-way analysis of variance test was used.

To judge the degree of success and application obstacles, the following criterion was used:

- Weak degree, if the averages reached between (1-2.33)
- Average degree, if the averages reached between (2.34-3.67)
- High degree, if the averages reached between (3.68-5)

Study results and discussion

Results of the first question and its discussion: "What is the degree of success of the educational loss plan from the point of view of science teachers in Jordan?" To answer this question, arithmetic means and standard deviations were calculated, and Table (1) records that.

Table (1). Arithmetic means and standard deviations of the degree of success of the educational loss plan

The field	M	SD	Degree
Skill domain	3.14	0.62	Medium
Emotional domain	3.18	0.55	Medium
Cognitive domain	3.20	0.59	Medium
Total score	3.17	0.59	Medium

Table (1) shows that the arithmetic averages of the degree of success of the educational loss plan were average, and the arithmetic averages ranged between (3.14-3.20), and the cognitive field came in the highest rank with an average of (3.20) and a standard deviation of (0.59), while the skill field came in the last rank, with an average of (3.14) and a standard deviation of (0.62), and the arithmetic average of the degree of success of the educational loss plan as a whole was (3.17) and a standard deviation of (0.52). It is possible to attribute this result to the presence of several factors that prevent the educational loss plan from succeeding at a high level, in addition to the nature of the study sample represented by science teachers, as the science subject needs a lot of explanation and clarification due to the nature of the skills it includes, and it is possible to attribute this result to the low awareness of the importance of educational loss, and the lack of awareness of its importance in the process Educational, student dropout, lack of motivation to learn, lack of adaptability, and lack of follow-up of achievement and evaluation during the period of implementing the learning plan based on outcomes and basic objectives. This result was consistent with the results of the studies of (Al-Bari, 2024; Al-Afishat, 2023; and Hazaima, 2022).

The arithmetic averages and standard deviations were calculated for the paragraphs of each field separately, as follows:

First: The cognitive aspect

Table (2). Arithmetic averages and standard deviations related to the cognitive aspect

Paragraphs	SD	M	Degree
The content of the plan is proportional to the time allocated for science.	0.77	2.76	Medium
The plan includes major topics in science to compensate for what the student has lost.	0.89	3.23	Medium
The plan is consistent with the outcomes of science teaching.	0.80	3.24	Medium
Topics provide an element of interest and excitement in the content of the science subject.	0.94	3.29	Medium

Paragraphs	SD	M	Degree
The plan takes into account individual differences among students.	0.79	3.25	Medium
The plan addresses alternative concepts among students.	0.79	3.30	Medium
The plan topics are characterized by accuracy and scientific	0.76	3.38	Medium
Cognitive domain	0.59	3.21	Medium

Table (2) shows that the arithmetic averages ranged between (2.76-3.38), and the paragraph "The plan topics are characterized by accuracy and scientific" ranked first with an arithmetic average of (3.38) and a standard deviation of (0.76), while the paragraph "The size of the plan content is proportional to the time allocated for the science subject" ranked last with an arithmetic average of (2.76) and a standard deviation of (0.77), and the arithmetic average for the cognitive domain as a whole was (3.21) and a standard deviation of (0.59). This result can be attributed to the fact that planning for the plan content is done by a specialized team in the Ministry of Education, and by reviewing the students' results, the educational gap, or the educational loss they need to acquire subsequent skills. As for the suitability of the size of the plan content with the time allocated for the science subject, this result can be attributed to the presence of students from different levels in addition to the individual differences between students. This requires the teacher to repeat himself often and allocate time other than that allocated for explaining a specific idea.

Second: The emotional aspect Table (3). Arithmetic averages and standard deviations related to the emotional aspect

Paragraphs	SD	M	Degree
The plan supports students psychologically and morally.	0.88	2.89	Medium
The plan encourages students to express their feelings and needs about learning science.	0.68	2.97	Medium
The plan takes into account the students' needs, interests and academic identity.	0.74	3.10	Medium
Enhancing scientific trends among students	0.86	3.22	Medium
The plan contributes to motivating students to learn science.	0.80	3.23	Medium
The plan encourages positive student interaction while learning science.	0.75	3.24	Medium
The plan includes individual and group scientific activities.	0.87	3.32	Medium
The content of the learning plan helps to make the student the focus of the educational process.	0.68	3.47	Medium
Emotional side	0.55	3.18	Medium

Table (3) shows that the arithmetic averages ranged between (2.89-3.47), and the paragraph "The content of the learning plan helps make the student the focus of the educational process" came in first place with an arithmetic average of (3.47) and a

standard deviation of (0.68), while the paragraph "The plan supports students psychologically and morally" came in last place, with an arithmetic average of (2.89) and a standard deviation of (0.88), and the arithmetic average for the emotional field as a whole was (3.18) and a standard deviation of (0.55). It is possible to attribute this result to the fact that the teaching activities and assessment tools included in the educational loss plan focus on the learner, as the goal of implementing this plan is to raise the academic level of students. As for the lowest paragraph, which states "The plan supports students psychologically and morally", it is possible to attribute this result to the fact that the learning plan focuses on cognitive and skill matters. And the scientific one is more focused on the emotional side itself.

Third: The skill aspect

Table (4). Arithmetic averages and standard deviations related to the skill aspect

Paragraphs	SD	M	Degree
Plan development skills paper and electronic worksheets	1.03	3.00	Medium
Adopting a comprehensive system for monitoring and evaluating science learning	0.77	3.05	Medium
Developing teachers' and students' technological skills for teaching science	1.04	3.05	Medium
Developing the plan for the skill of preparing scientific assignments (electronic and paper)	1.02	3.09	Medium
The plan focuses on students' self-learning science skills.	0.85	3.13	Medium
The plan includes all the skills students need to study science.	0.67	3.12	Medium
The plan content helps develop students' scientific thinking skills.	0.67	3.18	Medium
The plan focuses on employing and applying the scientific knowledge learned.	0.70	3.29	Medium
The plan enhances the skills of classification, communication, measurement, inference and prediction.	0.77	3.29	Medium
Skill side	0.62	3.14	Medium

Table (4) reveals that the arithmetic averages ranged between (3.00-3.29), and the paragraph "The plan enhances the skills of classification, communication, measurement, inference and prediction" came in first place with an arithmetic average of (3.29) and a standard deviation of (0.77), while the paragraph "The plan develops the skills of paper and electronic worksheets" came in last place, with an arithmetic average of (3.00) and a standard deviation of (1.03). The arithmetic mean for the skill aspect as a whole was (3.14) and a standard deviation of (0.62). This result can be attributed to the fact that classification, communication, measurement and inference skills are the most employed skills in science, and they are also key to acquiring the rest of the science skills. As for the lowest arithmetic mean, which came from the paragraph that states, "Development of the plan for paper and

electronic worksheet skills”, it is that the time allocated to implement the learning plan based on skills and basic outcomes is a specific time that does not exceed one month and is not sufficient to apply electronic skills more than others.

The result of the second question and its discussion: "What are the obstacles facing science teachers in implementing the educational loss plan from their point of view?" To answer the question, the arithmetic averages and standard deviations of the obstacles to the success of the educational loss plan from the point of view of science teachers in Jordan were extracted, and Table (5) summarizes that

Table (5). Arithmetic averages and standard deviations of the obstacles facing science teachers in implementing the educational loss plan

Paragraphs	SD	M	Degree
"Lack of school administration's contribution with teachers to the success of the plan"	0.70	2.80	Medium
Student dropout from school	0.90	3.04	Medium
Lack of training and qualification for teachers to implement the plan experience	0.87	3.13	Medium
Negative student attitudes towards science	0.77	3.29	Medium
Focus on basic skills such as arithmetic, reading and writing more than focusing on science	0.74	3.30	Medium
Lack of awareness among parents about the importance of implementing the plan	0.93	3.34	Medium
Implementing the plan requires additional resources to support students and their learning	0.70	3.34	Medium
Repeated student absence from classes allocated to the plan	0.80	3.37	Medium
Unclear instructions	0.99	3.37	Medium
Not taking into account educational gaps between different categories of students	0.82	3.37	Medium
Inappropriateness of educational curricula, educational programs and treatment plans	0.86	3.41	Medium
Loss of confidence in education and its value	1.01	3.52	Medium
Academic delay and decline in achievement	1.00	3.57	Medium
Students forget what they have previously learned	0.93	3.65	Medium
Low students' scientific skills	0.84	3.70	Medium
Total Obstacle Score	0.48	3.35	Medium

Table (5) shows that the arithmetic averages ranged between (2.80-3.70), and the paragraph "Low students' scientific skills" came in first place, with an arithmetic average of (3.70) and a standard deviation of (0.84), while the paragraph "Lack of school administration's contribution with teachers to the success of the plan" came in last place, with an arithmetic average of (2.80) and a standard deviation of (0.70). The arithmetic mean of the field of obstacles facing science teachers in implementing the

educational loss plan as a whole was (3.35) and a standard deviation of (0.48). This result can be attributed to the fact that the weak level of students and the presence of individual differences among them require the teacher to make an additional effort to improve the scientific skills of students, which hinders the process of following the plan designated for educational loss in the best possible way. As for the paragraph "the absence of the school administration's contribution with teachers to the success of the plan", this result can be attributed to the school administration's keenness to successfully implement the educational loss plan.

The result of the third question and its discussion: "Are there statistically significant differences at the level ($\alpha=0.05$) in the degree of success of the educational loss plan attributed to the variables (gender and years of experience)?" To answer this question, the arithmetic means and standard deviations of the degree of success of the educational loss plan were calculated according to the study variables, and Table (6) shows that.

Table (6). Arithmetic means and standard deviations of the degree of success of the educational loss plan according to the variables of gender and years of experience.

variable			Total score
Gender	Male	M	3.16
		SD	0.52
	Female	M	3.18
		SD	0.52
Experience	Less than 5 years	M	3.25
		SD	0.43
	From 5 years to 10 years	M	3.09
		SD	0.47
	10 years and above	M	3.19
		SD	3.16

Table (6) shows an apparent difference in the arithmetic means and standard deviations. To investigate the significance of this, a two-way analysis of variance was used for the tool as a whole, as shown in Table (7).

Table (7). Two-way analysis of variance for the effect of gender and number of years of experience on the degree of success of the educational loss plan

Source of variance	SS	df	MS	F value	sig.
Gender	0.001	1	0.001	0.003	0.953
Experience	0.306	2	0.153	0.560	0.574
Fault	20.501	75	0.273		
Total	815.918	79			

Table (7) shows that there are no statistically significant differences in the degree of success of the learning loss plan attributed to the variables of gender and years of experience. This result can be attributed to the fact that all teachers in the study sample teach the same educational material, are provided with the same tools and supplies, study in the same environment, and deal with students from the same cultural and social backgrounds. Teachers also receive the same training courses, so there were no statistically significant differences between them in their estimates of the success of the concept-based learning plan attributed to the variables of gender and teaching experience. The result related to the experience variable agreed with the result of the study (Hazaima, 2022), and also agreed with regard to the gender variable with the study (Al-Bari, 2024), while the result related to experience differed with the study (Al-Bari, 2024).

The result of the fourth question and its discussion: "Are there statistically significant differences at the level ($\alpha=0.05$) in the obstacles to the success of the educational loss plan attributed to the variables of gender and years of experience?" To answer the question, the arithmetic means and standard deviations of the obstacles to the success of the educational loss plan were calculated according to the study variables, and Table (8) shows this.

Table (8). Arithmetic means and standard deviations of obstacles to the success of the educational loss plan according to the variables of gender and years of experience.

variable			Total score
Gender	Male	M	3.32
		SD	0.50
	Female	M	3.36
		SD	0.47
Experience	Less than 5 years	M	3.48
		SD	0.43
	From 5 years to 10 years	M	3.28
		SD	0.45
	11 years and above	M	3.31
		SD	0.53

Table (8) shows apparent differences in the arithmetic means and standard deviations. To determine the significance of the differences, a two-way analysis of variance was used, as shown in Table (9).

Table (9). Two-way analysis of variance for the effect of gender and number of years of experience on the obstacles facing science teachers in implementing the educational loss plan

Source of variance	SS	df	MS	F value	sig.
Gender	0.001	1	0.001	0.003	0.960
Experience	0.493	2	0.247	1.063	0.351
Fault	17.406	75	0.232		
Total	901.929	79			

(9) shows that there are no statistically significant differences in the obstacles to the success of the educational loss plan attributed to the variables of gender and years of experience. This result can be attributed to the fact that the study sample of science teachers, both male and female, has the same requirements, as the study was implemented in government schools, and therefore, the tools available within the schools are the same, in addition to the fact that they study the same educational stage and the same scientific material. The educational loss plan is also an officially established plan, and not individual efforts. Therefore, there were no statistically significant differences in the responses of the study sample members according to the variables of gender and experience. This result is consistent with the results of the study (Al-Balushi, 2022).

Recommendations:

The study recommends, based on the results, the following:

- Providing training courses and programs that enhance teachers' skills on how to implement the learning loss plan.
- Working to find solutions to the obstacles that prevent the success of the learning loss plan.
- Raising awareness among the parties influencing the implementation of the plan, including teachers, students, and parents, about the importance of learning loss and its role in building subsequent education

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References

- [1] Abu Nab, Sanaa (2024). *Evaluation of educational loss in mathematics for primary school students in Madaba Governorate* [Unpublished Master's Thesis]. Mu'tah University.
- [2] Akhdir, Muhammad (2021). Compensating for educational loss: means and outcomes, *Journal of Educational and Human Sciences*, (4), 145-157.
- [3] Al-Afshat, Rawan (2023). *The Degree of Satisfaction of Basic Stage Teachers with Educational Loss Programs in Jordan* [Unpublished Master's Thesis]. Middle East University.
- [4] Al-Balushi, Susan (2022). Science teachers' trends to reduce educational loss for ninth graders in the intermediate stage, *Arab Research Journal in the Fields of Specific Education*, (28), 133-150.
- [5] Al-Bari, Radina (2024). The degree of satisfaction of Arabic language teachers with the experience of educational loss in Mafraq Governorate, *Al-Manara Journal for Research and Studies*, 3 (1), 9-31.
- [6] Al-Daghmi, Maha (2021). Educational loss during the Corona virus pandemic: its concept, estimation, effects and strategies for its recovery, *Journal of Educational Sciences*, 33 (3), 543-577.
- [7] Al-Jaidi, Dahha and Al-Ajami, Nouf (2019). Educational waste and factors leading to it in the secondary stage for girls in Al-Kharj Governorate in Egypt, *Journal of the Faculty of Education*, 35 (9), 701-721.
- [8] Al-Mustarihi, Loris (2022). Educational Loss: Its Effects and How to Improve It. Teacher's Thesis, Ministry of Education, *Department of Educational Planning and Research*, 59 (1), 64-66.
- [9] Al-Salem, Majed (2021). The extent of the contribution of the technology-enhanced educational environment in reducing students' educational loss in light of the Corona pandemic, *Journal of Educational and Psychological Sciences*, 22 (3), 189-219.
- [10] Al-Shahoumi, Saeed and Al-Hadabi, Daoud (2024). Educational Loss in Basic Education Schools in the Sultanate of Oman in Light of the Corona Pandemic "Covid-19", *Journal of Arab Research in the Fields of Qualitative Education*, (35), 135-188.
- [11] Annie E. Casey Foundation. (2024). *Pandemic Learning Loss and COVID-19: Education Impacts*. Retrieved from: <https://www.aecf.org/blog/pandemic-learning-loss-impacting-young-peoples-futures>
- [12] Ardington, C., Wills, G., & Kotze, J. (2021). COVID-19 Learning Losses: early grade reading in South Africa. *International Journal of Educational Development*, (66), 636-655.
- [13] Arenas, A. & Gortazar, L. (2024). Learning loss one year after school closures: evidence from the Basque Country. *SERIEs* 15, 235–258. <https://doi.org/10.1007/s13209-024-00296-4>
- [14] Awda, Nariman (2022). *The Level of Educational Loss among Second Grade Students in the Subjects of Arabic Language and Mathematics* [Unpublished Master's Thesis]. An-Najah National University.
- [15] Baysal, E., Yurtseven, R. & Ocak, G. (2023). Opinions of teachers on professional loss and gains during the pandemic. *Research in Pedagogy* 13(2):365-379. DOI:10.5937/IstrPed2302365B
- [16] Bethhäuser, B., Bach-Mortensen, A. & Engzell, P. (2023). systematic review and meta-analysis of the evidence on learning during the COVID-19 pandemic. *Nat Hum Behav*, 7, 375–385. <https://doi.org/10.1038/s41562-022-01506-4>
- [17] Center of Education Policy Research. (2023). *the Education Recovery Scorecard*. Harvard University. Retrieved from: <https://cepr.harvard.edu/news/new-research-finds-pandemic-learning-loss-impacted-whole-communities-regardless-student>
- [18] Deribe, D., Endale, B. & Ashebir, B. (2015). Factors Contributing to Educational Wastage at Primary Level: The Case of Lanfuro Woreda, Southern Ethiopia. *Global Journal of Human-Social Science*, 15 (1), 9-20.
- [19] Dori, Y., Avargil, S., Kohen, Z., & Saar, L. (2018). Context-based learning and metacognitive prompts for enhancing scientific text comprehension. *International Journal of Science Education*, 40 (10), 1198-1220
- [20] Engzell, P., Frey, A. & Verhagen, M. (2021). Learning loss due to school closures during the COVID-19 pandemic. *PNAS*, 118 (17), e2022376118. <https://doi.org/10.1073/pnas.2022376118> (2021).
- [21] Fullan, M. (2020). *Leading in a Culture of Change*. Jossey-Bass.
- [22] Guthrie, J. (2023). Summer Learning Camp Enrollment, Attendance and Achievement: Trends in Ten Tennessee Districts. *Tennessee Education Research Alliance*, 4 (12), 123-149.
- [23] Hargreaves, A., & Shirley, D. (2019). *The Fourth Way: The Inspiring Future for Educational Change*. Corwin Press.
- [24] Hattie, J. (2019). *Visible Learning for Teachers: Maximizing Impact on Learning*. Routledge.
- [25] Hazaimh, Laila (2022). *Evaluation of the Experience of Educational Loss among Students in the First Grades of the Basic Stage in Irbid Qasaba Schools from the Perspective of Teachers* [Unpublished Master's Thesis]. Al al-Bayt University.
- [26] Ibn Saeed, Sarah (2021). The level of effectiveness of the "Alamni" application to measure its effectiveness in addressing educational loss among general education students in the Kingdom of Saudi Arabia and their attitudes towards it, *Journal of Arts for Psychological and Educational Studies*, (11), 76-124.
- [27] Jakubowski, M., Gajderowicz, T. & Patrinos, H. (2023). Global learning loss in student achievement: First estimates using comparable reading scores. *Science direct*, 232, 111313. <https://doi.org/10.1016/j.econlet.2023.111313>.
- [28] König, J., Blömeke, S., & Kaiser, G. (2019). "Understanding the Link between Teachers' Pedagogical Knowledge and Teaching: A Meta-Analysis." *Review of Educational Research*, 89 (3), 340-370.

- [29] Koparan, E. & Bekalp, B. (2020). Communication and production processes during isolation: women's home office-mediated shift and workload transformation. *Moment Journal*, 7 (2), 149-172. DOI: 10.17572/mj2020.2.149172
- [30] McConnell, J. (2017). A model for understanding teachers' intentions to remain in STEM education. *International Journal of STEM Education*, 4 (1), 1-21.
- [31] Ministry of Education (2021). *Guide for Learning Based on Basic Concepts and Outcomes. Department of Curricula and Official Books*, National Library, Jordan.
- [32] Ofsted (2020) *COVID-19 Series: Briefing on Schools*. Retrieved from: <https://www.gov.uk/government/publications/covid-19-seriesbriefing-on-schools-october-2020>
- [33] Page, E., Leonard-Kane, R., Kashefpakdel, E., Riggall, A. & Guerriero, S. (2021). *Learning Loss, Learning Gains and Wellbeing: A Rapid Evidence Assessment*. ERIC, ED615066, Retrieved from: <https://eric.ed.gov/?id=ED615066>
- [34] Samuel, S. (2017). *Factors that influence educational wastge in public secondary schools in kath iana sub-country, Machakos County, Kenya* [unpublshed doctoral dissertation]. South eastern university.
- [35] UNICEF. (2022). *Learning loss must be recovered to avoid long-term damage to children's wellbeing and productivity*. Retrieved from: <https://www.unicef.org/press-releases/learning-loss-must-be-recovered-avoid-long-term-damage-childrens-wellbeing-and>
- [36] Wentzel, K., & Miele, D. (2016). *Handbook of motivation at school: Second edition. In Handbook of Motivation at School* (2nd Ed.). Routledge. <https://doi.org/10.4324/9781315773384>
- [37] World Bank. (2023). *First estimates of global learning loss in student achievement using comparable reading scores*. Retrieved from: <https://blogs.worldbank.org/en/education/first-estimates-global-learning-loss-student-achievement-using-comparable-reading-scores>