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Opportunities available for managing the educational crisis based on the experience of digital education during the COVID-19 pandemic
A comparative study between the Saudi and Algeria experiences for the three educational levels: primary, intermediate, and secondary

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Abstract:

The study aims to investigate the opportunities provided by digital education for managing the educational crisis in Algeria compared to the experience of Saudi Arabia during the COVID-19 pandemic. The comparative analytical approach was used, with research variables identified and information collected from various sources. The study concluded that digital education in Saudi Arabia facilitated interaction among students in the virtual classroom, timely access to lessons, and contributed to enjoyable learning experiences. It also widened the scope of interaction between students, teachers, supervisors, administrators and parents, thus creating a positive context for dialogue. In contrast, Algeria's the digital education strategy did not achieve the required interaction between students, teachers, and schools as a whole. However, digital education achieved opportunities that enabled Algeria to continue the learning process under exceptional circumstances with the least possible losses.

Keywords: Digital Education, Educational crisis management, COVID-19Crisis

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1. Introduction:

Our world is facing unprecedented educational challenges amidst all of the regional and international conflicts, natural disasters and deadly diseases and pandemics that we see around us. Currently, around 222 million children require urgent support in their education. More than 78 million children have been completely cut off from schooling, and approximately two-thirds of children at the age of ten worldwide are unable to read a simple text.(Education Cannot Wait, 2022)

For instance, when a 7.8 magnitude earthquake struck Nepal, it led to the complete or partial collapse of over two thousand schools requires citation. This had repercussions on the infrastructure of schools and consequently on children's education. In the Philippines, Typhoon Haiyan destroyed over 2500 schools and impacted 1.4 million children in 2013. Recent floods in Malawi affected hundreds of schools, disrupting the education of over 350000 children, according to (The world Bank, 2015)

In times of war, such as in Gaza, educational life has come to a near standstill due to heavy bombings. According to the Ministry of Education in Palestinian Authority (2023), since the beginning of the (Israeli Arial bombardment following the 7th of October attacks), approximately 600,000 students found themselves without schooling while over 8,000 students have lost their lives. Moreover, around 90% of schools in Gaza have been completely or partially destroyed, with over 100 schools turned into shelters by the UNRWA and the United Nations Relief and Works Agency for Palestinian Refugees. This illustrates the profound impact of these crises on education.(Mustafa, 2023)

As for deadly diseases and pandemics, in 2020, the World Health Organization declared the corona virus a global pandemic, affecting all sectors worldwide, including education. Governments around the world grappled with concerns about halting the educational process while rapidly exploring various strategies that necessitated the use of information and communication technology to manage the crisis within educational institutions.

Many Arab and foreign countries were able to successfully overcome this crisis by anchoring the educational process to safety with minimal losses. Meanwhile, other nations worldwide regressed and struggled to navigate the educational challenges. The Saudi experience stood out as being among the most successful Arab endeavors. It expanded the scope of digital learning services and online education, successfully adopting the virtual school model. This success became a valuable model for other countries to follow. Based on this remarkable success story, the following research question can be posed:

What are the opportunities available in adopting digital education to manage the educational crisis in Algeria based on the experience of the Kingdom of Saudi Arabia during the COVID-19 pandemic for the three educational levels: primary, intermediate, and secondary?

2. Background of the study:

2.1. Essential definitions:

A crisis is defined as "the critical moment and turning point related to the administrative fate of the organization, threatening its survival. Often, the crisis coincides with an element of surprise, requiring high skills to manage and address it" (Mahmoud, 2015).

According to Jadallah (2015) ***Crisis management*** is a specific administrative process aimed at producing a strategic response to crisis situations, involving a pre-selected and trained group of administrators who use their skills, along with specific procedures, to minimize losses.

Educational crisis management "is defined as the unceasing administrative processes that are concerned with predicting possible crises, keeping an eye on both internally or externally sourced variables creating the crisis and exploiting the accessible resources and capabilities to mitigate or deal with the crisis at the greatest degree of effectiveness and professionalism, in a manner that achieves the least damage to the educational institution, the environment, and workers".(Samawi, 2021)

Digital education is defined as "a type of education that relies on the use of digital technology and multimedia to provide educational content and facilitate communication between teachers and students online. It is also referred to as online education or distance learning using digital media" (Mohammed, 2023).

Finally, ***COVID-19*** is defined as "the disease caused by a corona virus called SARS-CoV-2WHO first learned of this new virus on 31 December 2019, following a report of a cluster of cases of so-called viral pneumonia in Wuhan, People's Republic of China, The most common symptoms of COVID-19 are fever, chills and sore throat".(World Hearlth Organization, 2023).

2.2. Similar previous studies:

A Crisis Management and Emergency Remote Education in the Light of the Saudi Experience and International Practices – A Case Study of the COVID-19 Pandemic by Halima Yousuf Al-Muntashiry

This study reviews international experiences undertaken by countries worldwide to sustain the educational process amid the spread of the COVID-19 pandemic. Adopting a crisis management approach, it introduces the Saudi experience, highlights UNESCO's efforts in this regard, attempts to envision the future of remote learning and e-learning post-crisis, and identifies opportunities available to educational systems to continue teaching.

B The role of digital education in the learning process– The experience of Victoria, Australia as a model – By Saudi authors Najwa and Nawal Atoui

The study aimed to investigate the role of digital education in learning by providing a general framework for the concept of digital education. It highlighted its role in the learning process and shed light on Victoria's experience in digital education. The study examined various programs and policies adopted during the pandemic, using a descriptive-analytical approach. The findings indicate that digital education is fundamental in solidifying information and data in the educational and training environment. It contributes to the quality of the learning process by enhancing the efficiency of both teachers and learners.

Moreover, digital education in Victoria has witnessed significant development in recent years, emphasizing innovation and quality through the use of various modern methods, programs, and technologies.

C- Role of public school teachers in digital learning skills and their attitudes towards its utilization amidst the COVID-19 pandemic" by Lara Saad El-din Mamdouh

The study aimed to assess the level of digital learning skills possessed by teachers in public schools and their attitudes towards using them during the COVID-19 pandemic. To achieve this goal, a mixed-methods approach was utilized. With a sample of over 310 teachers, the study concluded that teachers exhibited a high level of digital learning skills during the COVID-19 pandemic.

Our study aligns with previous research as it investigates the role of digital education in managing the educational crisis during the COVID-19 pandemic. We utilized a comparative approach instead of the descriptive-analytical approach employed in previous studies. In addition, we explore the opportunities that digital education presents for managing the educational crisis in Saudi Arabia and Algeria, aiming to leverage and enhance these opportunities for future development.

The importance of the present study:

The importance of this study arises from the significance of managing educational crises as the rational and most effective scientific strategy that safeguards the educational institutions in times of hardship. It seeks to maintain the flow of the educational institution's system and activities while minimizing the severity of crises as much as possible. Additionally, the importance of digital education has become a necessity in the modern era. Digital education is considered a crucial tool for educational institutions when facing the kind of severe crises that necessitate the suspension of the educational process. It contributes to delivering information and lessons to educational groups rapidly and at the appropriate time, with minimal costs, thereby enhancing the quality of education. This research paper aims to extract key points from the Saudi and Algerian experiences, shedding light on the opportunities provided by educational crisis management based on digital education strategy during the COVID-19 pandemic for the three educational levels: elementary, intermediate, and secondary.

Study Objectives:

The study aims to explore the available opportunities in adopting digital education to manage the educational crisis in Algeria, drawing insights from the experience of the Kingdom of Saudi Arabia during the COVID-19 crisis across the three educational levels: primary, intermediate, and secondary. This involved assessing how both countries managed to maintain and keep the educational process ongoing during the crisis. We identify strengths in their responses to the pandemic through digital education, and understanding the challenges faced in this regard.

Study Methodology:

The study employed a comparative analytical approach to understand how digital education is utilized amid the COVID-19 crisis within educational institutions. This was achieved by examining the experiences in both Saudi Arabia and Algeria, exploring similarities and differences between them. The study's tools focused on identifying the topic of comparison, which is the available opportunities for managing the educational crisis based on the digital education experience during the COVID-19 crisis for the three educational levels: primary, intermediate, and secondary in Saudi Arabia and Algeria. The study variables included digital education and crisis management. Data for the study were gathered from various sources, including books, articles, blogs, and reports,then it was interpreted in light of the research question

3. An analysis of the Saudi Arabia and Algerian experiences in digital education amid the COVID-19 pandemic for the three educational levels - primary, intermediate, and secondary:

In response to the suspension of in-person education due to the COVID-19 pandemic in February 2020, the Kingdom of Saudi Arabia successfully adopted a model based on digital tools and educational materials, namely the Virtual Learning Model. This approach spurred creativity at all levels, emphasizing awareness in supporting and enhancing educational technologies for teachers and students' learning experiences. This achievement positioned Saudi Arabia at the forefront of leading countries in the field of digital education, opening the door for other nations, including Algeria, to benefit from its experience and advance the education sector.

3.1 Saudi experience with digital education amid the COVID-19:

3.1.1 The level of achievement by the Kingdom of Saudi Arabia of educational continuity in light of the Covid-19 pandemic

A. Technological infrastructure in Saudi Arabia before and during the COVID-19 crisis:

The Kingdom of Saudi Arabia has worked to promote technology-based teaching and digital education in schools, and to enhance the digital skills of teachers and students. This is in line with the previously set goals, as the Ministry of Education in the Kingdom, according to the world bank report, took the initiative to implement e-learning in secondary schools with a budget of 56 million Saudi riyals as a pilot project, and the Kingdom aims to increase the budget to be in line with developed countries in educational technology.

Here are some statistics on the technological infrastructure of the Kingdom of Saudi Arabia for the period (2015-2020) According to ALECSO (2022)

1/Individuals' use of the internet:

Table1. Individuals' use of the internet

The years	2015	2016	2017	2018	2019	2020
Saudi Arabia	69,6%	74,9%	94,2%	93,3%	95,7%	97,9%

Source: Digital education in Arab countries.(ALECSO, 2022).

Regarding individuals' internet usage, notable efforts have been made in the Kingdom of Saudi Arabia to develop technological infrastructure in recent years. There has been a significant advancement in the percentage of individuals accessing the internet during the

period (2015-2020), reaching 97.9% in late 2020, as illustrated in the table above.

2/Computer utilization inside school facilities

Regarding the use of computers for educational purposes, both of the primary, middle and secondary schools in the Kingdom of Saudi Arabia had access to educational computers at a rate approaching 100% during the period from 2016 to 2020.

3 /The use of the internet for educational purposes

Regarding schools' use of the internet for educational purposes, it is noteworthy that almost all primary, middle, and secondary schools in the Kingdom of Saudi Arabia were connected to the Internet at a ratio of nearly 100% during the period from 2016 to 2020.

Indeed, it is evident from the previously mentioned information that the technological infrastructure in the Kingdom of Saudi Arabia is robust and well-developed.

B-The Kingdom of Saudi Arabia's strategy:

after the decision to suspend studies in the Kingdom of Saudi Arabia, the Ministry of Education took the initiative to activate digital learning platforms for more than six million students, both male and female. (Al-Muntashiry,2020)

According to Al-Muntashiry (2020), the following measures were taken:

1/Constructing a virtual school building in one week, establishing a satellite broadcast, installing 20,000 virtual smart boards, and training faculty members to record educational video clips.

2/Preparing daily lessons to explain the curricula with the participation of 276 male and female teachers and 73 supervisor's. A total of 3,368 lessons were taught, and the number of teaching hours was 1,684 hours.

3/In addition to the curriculum review lessons, with the participation of 123 male and female teachers and 73 supervisors, 1,107 lessons were reviewed and the number of teaching hours reached 554 hours.

4/The Ministry of Education in Saudi Arabia adopted a blended approach to remote learning, incorporating both synchronous and asynchronous interaction methods.

C/Digital education tools

*1/The MADRASATI Platform*s "An interactive system created specifically to address the disruption of the educational process due to the COVID-19 crisis. This system relies on the existence of a digital environment that presents courses and activities to students in the Kingdom of Saudi Arabia through unified electronic networks and smart devices via a cohesive electronic system"(Abdul Rahman, Areej,2021)

*2/IEN CHANNEL:*An interactive system created specifically to address the disruption of the educational process due to the COVID-19 crisis."This system relies on the existence of a digital environment that presents courses and activities to students in the Kingdom of Saudi Arabia through unified electronic networks and smart devices via a cohesive electronic system"(Al-Meelby, 2019)

*3/FUTUR GATWAY:***"**The Future Gateway project was launched in October 2017 as an educational platform provided by the Ministry of Education for all elements of the educational process". (Al-Hajiri, 2020)

4/UNIFIED EDUCATION SYSTEME:"It is one of the distance learning platforms provided by the Ministry of Education, allowing students, teachers, and parents to access it through the activated Noor system in all schools in the Kingdom of Saudi Arabia. Teachers can monitor student attendance, assignments, and periodic tests, while school administrators can obtain reports on the number of students and teachers' performance".(Al-Hajiri, 2020)

5/The Back-to-School website: According to World Bank report(2022), The Saudi ministry of education sought to create a website that provides many educational materials, and can be accessed through the MADRASATI platform, where there are more than 300 multimedia and educational materials such as user guides, explanatory diagrams, training guides, and interactive video presentations as a guide to how to use them

6/The Virtual Kindergarten Application: In addition to the website, an app was launched with an aim to provide a virtual educational environment that has the potential to arouse children's excitement. In the 2020/2021 school term, the app had 3.5 million views, with 300,000 children and 283,000 of their parents registered (World Bank; 2022)

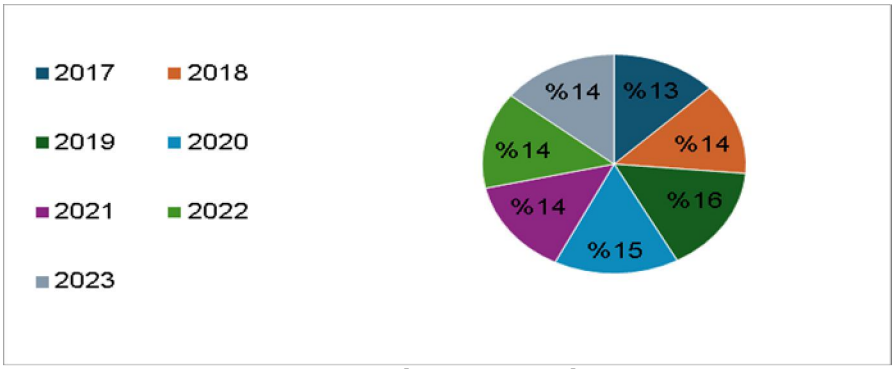
D/Government spending on education for three educational stages in Saudi Arabia:

Table 2: Government spending on education in Saudi Arabia by dollars

The years	Gouvernement spending on éducation
2017	3266841494533
2018	3432069583385
2019	3991365231055
2020	3886958645430
2021	3579034348070
2022	3623299245833
2023	3625819118826

Source: based on statistics from the Ministry of Education in the Kingdom of Saudi Arabia.

Fig.1.Percentage of government spending on education Saudi Arabia



Source: Authors' own work

The government expenditure on education in the kingdom of Saudi Arabia showed fluctuation in the years (2017-2018), with percentage of 13% an 14% respectively. In the following two years (2019-2020), during the onset and spread of the pandemic, the percentages increased to 16% and 15%.

The budget allocated for the year 2020 to 3886958645430 dollars In 2021, the expenditure was 3579034348070 dollars. Notably, the education expenditure percentage for

2020 exceeded that of 2021 due to exceptional economic circumstances and the unprecedented challenges posed by the COVID-19 crisis. The percentage is then stabilized at 14% for the years 2021-2022-2023, reflecting the economic conditions and strategies adopted to address the ongoing challenges

3.1.2 Strengths of Saudi Arabia's response to the pandemic in education based on the digital education experience

The World Bank (2022) identified a set of points considered strengths in the Kingdom of Saudi Arabia's response which include:

1. Rapid provision of distance education for ensuring its continuity.
2. Prioritized student-teacher connection.
3. Availability of a wide range of tools and resources.
4. Regular monitoring of user data and feedback loops to improve tools and services.
5. Law-tech alternatives for students without internet access.
6. Provision of special distance education.
7. Professional training and support.
8. Good use of teacher communities of practice and caching.
9. Frequent and clear communication with stakeholders.
10. Enhanced parental engagement

3.2Reading into the Algeria experience with digital education amid the COVID-19 pandemic for the three educational levels - primary, intermediate, and secondary

3.2.1 Measures taken in Algeria to ensure the continuity of the educational process in light of the Covid-19 pandemic

A. Technological infrastructure in Algeria before and during the COVID-19 crisis

Here are some statistics on the technological infrastructure of the Algerian for the period (2015-2020). (ALECSO, 2022)

1/Individuals' use of the internet:

Table1. Individuals' use of the internet

The years	2015	2016	2017	2018	2019	2020
Algerian	38,2%	42,9%	47,7%	49%	57,9%	62,9%

Source: Digital education in Arab countries. (ALECSO, 2022)

Regarding individuals' internet usage, we notice efforts in Algeria to develop the infrastructure in recent years, leading to a significant increase in the percentage of individuals using the internet between 2015 and 2020. As illustrated in the figure, the internet access rate in Algeria surpassed 60% by the end of 2020.

2/Electricity supply

For electricity, Algeria recorded an access rate exceeding 90% in late 2020.

3/Computer utilization for educational purposes

For the use of computers for educational purposes in schools, Algeria lacks computers for educational purposes in primary schools. However, in secondary schools, the percentage exceeded 80%, approaching 90% by late 2020.

4/Schools' use of the internet for educational purposes

For the use of the internet for educational purposes in schools, the percentage is low in Algeria's primary schools, not exceeding 10%. In middle schools, it hasn't surpassed 60%, while in high schools; it exceeded 70% by late 2020.

According to the statistics of the Arab Organization for Education, Culture, and Science (ALECSO), there is noticeable technological infrastructure development until the year 2020, particularly in the middle and high school stages. However, it remains weak in the primary stage.

B. The strategy implemented during the period of COVID-19 by the Ministry of National Education in Algeria

According to the Algerian ministry of National Education website (2021), the ministry has taken a number of measures and procedures in order to prevent the spread of the Covid-19 virus in the school environment and ensure the continuity of the education facility to provide educational services to learners. The Ministry has monitored the enrollment of more than 10 million students in school seats during the 2020-2021 seasons, at a rate of 98.7%. The outcome of the operations completed in the plan to confront Covid-19 which included the following:

1/Preferable utilization of information and Communication Technology in the context of COVID-19

2/The measures and actions taken to address the exceptional suspension of studies and ensure the continuity of the education sector involved harnessing digital learning tools, utilizing them for the benefit of students, and preparing a protocol for the necessary preventive measures against the corona virus at the level of educational institutions.

3/ Exceptional arrangements for organizing and completing end-of-year academic tasks for the academic year 19-20: Calculating the average of the first and second semesters exceptionally at all educational levels, determining the procedures for holding faculty, department, admissions, and guidance councils. Cancelling the final exam for the primary education stage, cancelling the proficiency exam for remote learners, and ensuring the smooth transportation of students, specifically those of the Sahrawi Arab Democratic Republic, under favorable conditions

4/ Organization of the Baccalaureate Certificate Exam for the 2020 session: The exams were postponed until the end of September, with the reopening of educational institutions in August and September. Transfer rates to the first year of secondary school were calculated, and the exam for the Certificate of Intermediate Education was canceled. The transfer rate to the first year of secondary school reached 90%, while the success rate in the Baccalaureate Certificate in that year was 55.3%. The number of candidates in the Baccalaureate Certificate exam was 637538.

C. Digital education tools used in education in Algeria during the COVID-19 crisis

The Ministry of National Education (2021) has established a set of websites and platforms for the benefit of students during the suspension of classes, including the following:

1/ *Keys to success program***:** "An educational program that includes model lessons in which the lessons were broadcast online, starting on Sunday, April 5, 2020, through the digital platforms of the National Office for Distance Education and Training, for the benefit of students in the fourth year of middle school and the third year of secondary school, according to a timetable for accessing these platforms"(The Algerian Public Television Corporation, 2020), The number of classes reached 130 on Algerian public television channels, while the number of students reached 2161124 male and female students.

2. *Digital floors of the National Office for Distance Education and Training:* Educational classes were broadcast via 7 floors for the benefit of fourth-year intermediate and third-year secondary students.

3. *The use of YouTube*: 2289 educational lessons for the third semester were broadcast on YouTube channels through 18 broadcast points, in addition to recording and broadcasting 1381 lessons for exercises and applications for the benefit of students in all three educational stages.

4. *Local Radio***:** 100 model lessons for the third semester, and classes on psychological support, were recorded on local radios for the benefit of fifth-grade, fourth-grade, and third-year secondary school students, especially those who do not have access to media and communication.

5. *The Knowledge Channel***:** Launched on May 19, 2020, via AlcomSat-1 satellite, it marked the inauguration of the first educational knowledge television channel, ALMAARIFA, ensuring the continuity of the educational infrastructure for remote learning. The broadcast was later expanded to Nile Sat satellite, delivering a total of 494 sessions for students across the three educational levels.

6.*Top Academy***:**"The website includes over 19,000 exercises for both intermediate and secondary levels, more than 82,500 multiple-choice questions (QCM), textbook lessons, over 2,300 summaries by specialized teachers, tests for all chapters, a YouTube channel with over 4,000 videos, and more than 200 professors overseeing the content. They also offer a "call me back" service to address inquiries". (Top Academy, 2023)

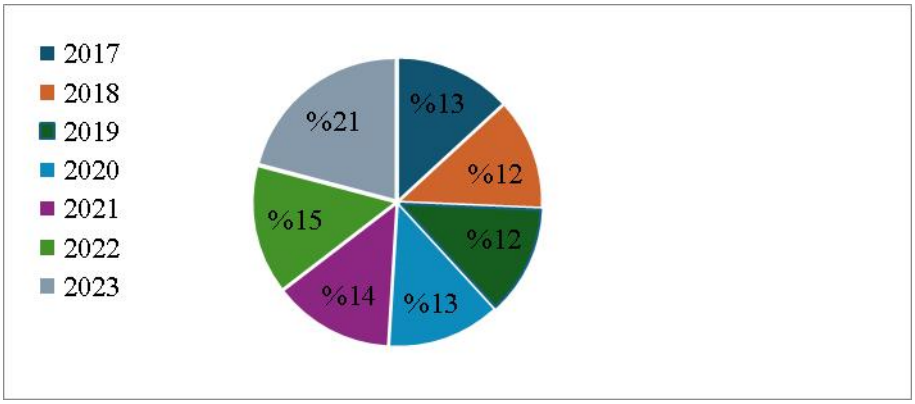
D/Government spending on education for the three educational stages in Algeria

Table 4: Government spending on education in Algeria by dollars

The years	Gouvernement spending on éducation
2017	6489793764675
2018	5985815252235
2019	5985815252235
2020	6061238775510
2021	5554870761918
2022	5939981812945
2023	8706523439243

Source: Prepared by the two researchers based on statistics from the Ministry of National Education.

Fig.1. Percentage of government spending on education Algeria



Source: Authors' own work

The allocated budget for education has generally experienced fluctuation, reaching 13% in 2017. It decreased during the years 2018-2019 to reach 12%before rising amid the COVID-19 pandemic in 2020-2021 to reach 13% and 14% respectively. The operational budget for the education sector in 2020 amounted to 6061238775510 dollars. In 2021, it reached 5554870761918 dollars. This increase in education spending can be attributed to its significance as one of the crucial sectors, especially in the context of the pandemic, lockdown measures, and the adoption of alternative means of education that require additional funding.

So that the percentage of spending continues to increase, as it reached 15% and 21%.in the years 2022-2023, respectively, due to the changes that occurred in the sector during the pandemic and continued afterward.

3.2.2The strengths of the Algeria response to the COVID-19 crisis in education on the experience with digital learning:

Algeria has achieved a set of positive points through its utilization of digitization in the education sector during the COVID-19 crisis. These can be summarized as follows:

1. Reorganizing schooling to ensure the right to education for all students.
2. Developing multiple platforms to deliver lessons for all educational levels.
3. Establishing dedicated television channels for distance education.
4. Enhancing the quality of education through pedagogical reforms.
5. Adopting digitization as the sole source for registering students in school examinations (end of primary, intermediate, and secondary education stages).

6. Launching the AWLYAA application.
7. Establishing a dedicated space for teachers within the information system.
8. Launching the Digital Model School project on October 21, 2020, coinciding with the start of the 2020-2021 school years at Abdurrahman El-Akhdari Elementary School in Batna

4. Presenting the results of comparing the Saudi and Algerian experiences:

4.1 In terms of technological infrastructure:

Based on the statistics mentioned previously regarding individuals' use of the Internet and electrical current, as well as the use of computers and schools' use of the Internet for educational purposes, it can be said that the Kingdom of Saudi Arabia possesses a strong technological infrastructure that has helped it employ digital education in the three educational stages, while Algeria still needs potential in the technological infrastructure that allows the success of this type of education, especially in primary schools.

4.2 In terms of curriculum and content:

According to the World Bank statistics on academic achievement in Saudi Arabia, 68% of teachers reported that academic achievement has improved this year. School principals also shared this view, with 61% agreeing. Additionally, 46% of supervisors believed that there is an increase in academic achievement. As for the students, 52% of them believed they could have learned better if the education was in-person, while 40% mentioned they would have received the same level of education

In Algeria, according to the Ministry of Education statistics (2020), YouTube is the most interactive platform among students, with over 29 million views. No participation rates were provided for other platforms. Additionally, primary and intermediate education exams were canceled, and the acceptance rate for the first year of secondary education was calculated without passing the certificate exam, reaching 90.6% .The acceptance for the baccalaureate certificate has been reduced from 10 to 9.5. However, the success rate in the baccalaureate exam was low at 55.3%. This reflects a decline in students' understanding of the content delivered through digital platforms, highlighting the ineffectiveness of digital education. It calls for a reassessment of curricula, their formulation, and an examination of their outcomes to equip the educational system to face such challenges. This reflects the low level of students' familiarity with the lessons offered to them via digital platforms and the lack of effectiveness in digital education, which requires reconsidering the curricula and their formulation and focusing on their outcomes that qualify the educational system to confront such crises.

4.3In terms of teacher training:

The use of e-learning and information and communications technology in the Kingdom of Saudi Arabia before the pandemic helped in the professional development of teachers, training them, and refining their skills. According to World Bank statistics (2022), 59% of supervisors and 81% of school principals stated that a large percentage of teachers have advanced skills in digital education. 91% of the teachers in the Kingdom are reported to have advanced and satisfactory skills in digital education. Many middle and high school teachers also believed that not much had changed before and during the pandemic, and 95% of them confirmed that they are well prepared if the need arises to return to digital education.

In Algeria, the Ministry has shown significant interest in training teachers through various projects and programs launched both before and during the pandemic. One notable initiative is the "Training of Trainers and Enhancement of Level," aiming to review existing regulations, improve training programs, enhance practices and performance, and identify training needs for teachers in accordance with quality standards in education .

Despite the efforts exerted, the effectiveness of using digital technology remains weak, with teachers not benefiting significantly from the training provided and not effectively employing it. This is evident in the academic achievement results of students in the baccalaureate exam, with a low percentage of 55.3% at an average of 9.5, compared to previous years. The limited participation and interaction on digital platforms underscore the need to reconsider training programs for teachers.

4.4In terms of the impact of the crisis on education:

The impact of the pandemic on education can be measured by assessing the effectiveness of digital education in ensuring continued learning and mitigating negative effects. This can be done by comparing learning outcomes during the pandemic with those obtained before the pandemic.

In Saudi Arabia, My School platform assisted teachers in their evaluation, as exams were conducted electronically through the internet. The first part consisted of multiple-choice questions, while the second part included written questions that teachers assessed manually. Analyzing exam scores for the period (2018-2020) revealed a range of success approaching 73%-76%, while in 2021, the percentage increased to 90%. This could be attributed to changes in exam design and implementation, alterations in the teacher's grading and marking approach, or perhaps as compensation for challenging circumstances that affected students.

In Algeria, the pandemic has impacted the academic achievements of students and the overall education system. Each educational group with more than 24 students has been divided into two or three subgroups, resulting in a significant increase in the number of subgroups. This necessitated the hiring of additional teachers across all subgroups. The subgroups of each institution are categorized into (A) and (B), or three groups when necessary, with a balanced approach to ensure that subgroups of the same educational group are placed in the same category. Group (A) attends classes in the morning and Group (B) in the evening, followed by a rotation either daily or weekly. The morning session, lasting four hours at most, is divided into a maximum of six classes. The evening session, lasting three

hours and 45 minutes, is divided into a maximum of five classes. Each class is 45 minutes long, creating pressure on students due to the number of classes in a day. As for the periods of assessment tests, the academic year was divided into two academic semesters, with the cancellation of the primary education certificate and intermediate education certificate exams, and only calculating the acceptance rate for moving to the first year of secondary school, where the success rate according to the statistics of the Ministry of National Education reached 90%. The success rates for the baccalaureate exam for the years 2018, 2019, 2020, and 2021 were 55.88%, 54.56%, 55.30%, and 61.17%, respectively. It's noteworthy that the success rate for the year 2021 increased compared to the years preceding the pandemic. This increase could be attributed to the reduction in the subjects examined for the academic years 2020 and 2021, considering the exceptional circumstances of education during that period. Therefore, the impact of the pandemic on education in Algeria has been significant compared to Saudi Arabia, which managed to address the situation and ensure the effectiveness of digital learning.

4.5In terms of equality in education:

The Ministry of Education in the Kingdom of Saudi Arabia has implemented special measures for children with special needs in the context of digital education. According to the World Bank report, three educational channels have been directed through the "IEN" portal and YouTube to cover the curricula designed for students with special needs. Thousands of lessons have been recorded, supported by sign language for students facing hearing difficulties. Additionally, alternative options were presented through the "MADRASATI" platform and Microsoft Teams to support children with special needs. Individual face-to-face training sessions were arranged for some students at school, and the "IEN" educational channels included guidelines for parents to encourage their participation in their children's learning.

The technological infrastructure weakness in Algeria has resulted in disparities among students, encompassing social, physical, mental, and geographical aspects. There's a shortage of curricula and content tailored for children in remote areas and those with special needs, who have been deprived of a face-to-face education system that suits their conditions. This has created challenges for this group to access education during the pandemic in Algeria.

5. Conclusion:

By highlighting the Saudi and Algerian experiences in digital education, clear differences emerge in terms of technological infrastructure and the available resources that support and provide a fertile ground for effective digital education. It turns out that emergency strategies and plans, and the size of the digital economy in both countries play crucial roles. The Saudi experience has demonstrated that digital education provides opportunities for student interaction through digital tools, facilitating simultaneous usage. The use of interactive videos, digital textbooks, and other virtual tools for organized content presentation has been enormously beneficial. Digital education has made learning more enjoyable for students, capturing their attention through extensive use of digital platforms and various applications.

Interaction between students and teachers has created a positive context for dialogue and discussion. Despite some challenges, Saudi Arabia has effectively utilized digital education as a successful strategy for managing the education in times of crisis.

Algeria, on its part, still needs to work on enhancing its technological infrastructure. Despite providing materials and resources, their utilization has not reached the desired level.

Additionally, there is a lack of teachers utilizing training and engaging with digital content with students, hindering the maintenance of education during emergencies. Moreover, students exhibit insufficient skills in using and leveraging technological resources.

In addition to the aforementioned challenges, there is also inequality in education for children with special needs and those in remote areas who have not received the educational content provided by the ministry like other students.

Therefore, it is crucial for the ministry to consider these points to ensure the continuity of education times of emergencies, as digital education has become the most successful means of managing education as different types of crises ensue.

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