

Digital Transformation within Saudi Education System: 2020 and Beyond

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How to cite this paper: Ahlam A. Alghamdi. (2022). Digital Transformation within Saudi Education System: 2020 and Beyond. *The Educational Review, USA*, 6(8), 419-425.
DOI: 10.26855/er.2022.08.014

Received: July 20, 2022
Accepted: August 18, 2022
Published: September 1, 2022

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Abstract

Since early 2020, the COVID-19 crisis has driven the most visible and controversial disruptions that educational communities have ever witnessed. Globally, many countries have been forced to transition to digital alternatives to sustain education while lacking prior knowledge and sufficient experience. In Saudi Arabia, this crisis has offered the nation the chance to reconstruct the perspective on education by considering unlimited digital possibilities. Accordingly, this paper synthesizes the approaches to digital transformation in Saudi Arabia during the COVID-19 pandemic, from the initial response of the education system to the urgent call of the World Health Organization to address the change, including the impact of the crisis on the policy and philosophy of education beyond 2020. This article also discusses the Kingdom's national plan for digital inclusion, which facilitated a smooth digital transition during the crisis. We also shed some light on the status of digital literacy and the popularity of digital culture in the Saudi context. Finally, we briefly describe teacher digital literacy and development pre-, peri- and post-COVID-19. Actions taken after 2020 and lessons learned from the crisis are also discussed within the framework of Saudi digital growth.

Keywords

Digital Transformation COVID-19, Education System, Saudi Arabia

1. Introduction

1.1 Background of the Study

In the spring of 2020, the outbreak of COVID-19 began to dramatically change life, public health and safety worldwide. Many countries have taken severe actions in response to the urgent call of the World Health Organization to slow the transmission of the virus. The virus's high capacity for explosive spread has prompted world leaders to implement total lockdowns and set strict rules to stop the outbreak. Many countries have adopted policies to strictly ensure social and physical distancing and keep social interactions to a minimum to contain the virus. Within a few months of the initial spread of the virus, many world leaders increased regulations to ensure full quarantines and closures regarding many aspects of life, such as social gatherings, economic activities, and educational processes (World Health Organization, 2020).

At the global level and within education communities, the coronavirus has brought unique challenges. The COVID-19 pandemic is the first crisis with an impact of such a scale and severity that it has driven changes in the current educational landscape, requiring digital backup solutions via simultaneous demands and immediacy (Daniel, 2020). Accordingly, digital infrastructure and internet accessibility comprise a new landscape for a new and urgent form of education. Nevertheless, the unequal distribution of internet services and poor infrastructure across different regions of

the world have been reported as global issues. The COVID-19 crisis has thus exposed deep inequalities in the access to the internet among school-aged children and has presented a concerning picture of the quality and equality of children's online educational opportunities (Rodriguez et al., 2020). According to UNICEF (2020), at least one-third of the world's schoolchildren—463 million children—have been unable to access digital platforms for online or remote learning during school closures due to COVID-19. Among pre-primary-age children, nearly 120 million cannot be reached due to a lack of internet access, a shortage of digital devices, an unavailability of online learning platforms, or poor home assets for remote learning (UNICEF, 2020).

The coronavirus outbreak took the world by surprise. Moreover, what has happened at the global level is not much different from what has happened in Saudi Arabia in terms of unpredicted and prolonged school closures. What has made a real difference are the investments in the technology sector that the country has financed nationally in the last decade. The COVID-19 crisis came at a time when the country was already focused on its progression toward a new, innovative, and improved method of accelerating the stages of development-related digital transformation. The proposed agenda of the National Transformation Program, first launched in 2016, has aimed to achieve governmental operational excellence by establishing the necessary infrastructure to raise the standards of living. The Kingdom's government has thus invested in digital transformation, especially in that of education (Unified National Platform, 2021). Education is one of the government's means for building a digitally civilized society. Committed to such plans, significant government investment was made in the sector of education during 2020, with nearly 19% of the country's total budget allocated to its wider academic infrastructure. Consequently, a seamless shift to online learning to support students and teachers and respond swiftly and decisively to the onset of the COVID-19 pandemic has occurred (National Transformation Program, 2020).

1.2 The Current Study

In light of this novel scenario, the aim of this paper is to track the concrete changes that occurred in the education system in Saudi Arabia during 2020 due to COVID-19. This paper is descriptive in nature. Using a narrative review, we thus describe the digital approach that has been used for managing the educational crises caused by COVID-19 within the Saudi education system. Providing an evidence synthesis of data and statistics collected at the national and international levels, we comprehensively discuss previously published information to demonstrate how the crisis affected the policy and philosophy of digitalization, pre- and post-2020, in the Saudi digital context. The data sources we use in this review include national and international databases, global organizations' reports, general authority statistics, scholarly articles, and academic publications. Specifically, in this paper, we review digital transformation in Saudi Arabia with respect to the following:

- 1) Compatibility of the digital actions in response to the unexpected challenge of COVID-19 with teachers' digital competencies.
- 2) Digitalization status in the country's plan of development and the modalities of digital inclusion among the Saudi population.
- 3) Resilience within the education system's aftermath and a consideration of how digital capabilities can reshape the future of education.

1.3 The Early Crisis Stage

Building on its experience with the Middle East respiratory syndrome (MERS) epidemic in 2012 and the severe acute respiratory syndrome (SARS) pandemic in 2002, Saudi Arabia supported a high level of alertness and readiness to seriously respond to COVID-19, even before there were 100 confirmed cases in the Kingdom (Perveen et al., 2020; Tanveer et al., 2020). Royal Decree No. 35700 was released on February 3, 2020, and called for urgent procedures to respond to global concerns with the outbreak of COVID-19 in China and to ensure a high level of preparedness (Alshammari et al., 2020). A committee headed by the Ministry of Health (MOH) and Ministry of Education (MOE) was urgently formed to evaluate the development of the pandemic and its rapid international spread. The first confirmed case of novel coronavirus in Saudi Arabia was detected on March 2, 2020. One week later, on March 8, 2020, the Saudi government announced the suspension of school attendance at all public and private educational facilities. Compared to the MERS epidemic, the COVID-19 pandemic has caused a higher level of disruption in education. Consequently, online distance education for all K-12 schools and universities was enforced on March 9, 2020. This unprecedented decision forced the MOE to evaluate the ongoing situation and develop alternatives to ensure a smooth transition as quickly as possible (Hassounah et al., 2020).

2. Digital Response to the COVID-19 Crisis

2.1 Education Continuity

The Saudi MOE offered multiple options for students and families in public schools to study remotely at home. The first option involved the launch of “iEN” satellite channels immediately after the school closure decision on March 9, 2020. iEN is composed of 20 stations broadcasting nationally, live from classrooms at the Prince Sultan bin Abdulaziz Educational Complex in Riyadh. These channels aired lessons for students in their homes for all grades at frequent intervals each day. Students also had full access to iEN channels by using the popular medium YouTube. The second option involved launching an online-based interactive platform, which provided synchronized interaction between students and teachers in virtual classrooms, known as “Madrasti”, the Arabic form of “my school”. The Madrasti platform featured a package of digital tools to facilitate the progression of teaching and learning. Originally, the digital platform was intended to be used during the first seven weeks of the first semester in the 2020 academic year, which started in August. However, as the pandemic continued longer than expected, the MOE announced that distance learning through Madrasti would continue until further notice.

To ensure full technical support during this new experience with the innovation of digital-based learning, the MOE established a communication center called “Tawasul” to support learners, families, and teachers and keep everyone informed and connected during this difficult school closure period. The Tawasul Center started its official operation on March 15, 2020. Additional support was provided through the launch of the SmartSheet educational platform for teachers and students, which was fully activated on April 12, 2020. The SmartSheet platform, paired with Madrasti, stores completed lessons; for example, 459 lessons were filmed with sign language for students with special needs to ensure their integration in the educational society through equal services. Inclusive education was also focused on to ensure that no one was left behind, especially disadvantaged students and families, by assuring their opportunity to access the necessary devices for such a transition. Government support through the collaboration of the Ministry of Communications and Information Technology with the Takaful system and 141 other initiatives helped provide families with the necessary resources and digital materials to support their students learning at home (Ministry of Education, 2020). Takaful—the Arabic form of “solidarity”—is a charity foundation that was established to support disadvantaged students, financially and morally, to continue their successful education (Unified National Platform, 2020).

Some other options that were implemented to facilitate this digital transformation included the Unified Education System, Future Gate Portal, and National iEN Gate. As an initial step, in 2017, prior to COVID-19, the Kingdom launched the Future Gate initiative, which was designed to provide a country-wide, centralized learning management system (LMS) to 25,000 middle and secondary schools, 4,500,000 students, and 500,000 teachers (Ohali et al., 2018). As the next step in this process, during the pandemic, the Future Gate Platform provided users with CMC tools for teachers and students, providing synchronous interactive lessons that were available at any time and serving the intermediate and secondary schools that are distributed across more than 33 educational directorates in the provinces and governorates of the Kingdom.

2.2 Teachers’ Digital Competency

Such intensive digital support of the response to the pandemic in the education sector could not ensure that online learning was successful unless it was accompanied by qualified human competencies. Prior to the crisis, the OECD’s 2018 Teaching and Learning International Survey (TALIS) indicated that 76% of Saudi teachers who reported having ICT skills for teaching had gained these skills in their professional development activities. The results of TALIS 2018 thus suggested that teachers in Saudi Arabia take their ICT teaching skills seriously to ensure that they are comparatively well prepared (Mann et al., 2020). However, the sudden digital transformation to teaching online created a range of challenges at multiple levels, including teachers’ readiness to move from face-to-face to online platforms and the requisite digital knowledge and skills this transformation, which required them to fully adopt online instruction. This situation was challenging for teachers, who typically rely on their digital skills as only one element of their professional role, as they had to keep pace with the sudden change and deliver instruction (Trust & Whalen, 2020).

Recognizing the importance of teachers’ professionalism in terms of their digital innovation readiness, the Saudi MOE provided distance training and professional development sessions for teachers on the new instruction format during the COVID-19 pandemic (O’Keefe et al., 2020). Hence, the government representatives and national administrators who participated in the OECD-Harvard COVID-19 global survey reported that teachers were supported in various ways to elevate their capacity to innovate during the pandemic. For example, teachers were provided instructional packages and resources (printed, online), and online platforms (virtual classrooms) allowing teachers to access professional development sources and engage in self-directed or collaborative learning with peer networks within across schools were

launched, while guidance from leadership was offered as needed. According to the second OECD-Harvard COVID-19 global survey on educational responses to the pandemic, Saudi Arabia was therefore one of very few countries that provided its teaching staff with funds to undertake courses related to their professional development (Mann et al., 2020).

3. Saudi National Digitalization

3.1 Digital Literacy in the Saudi Context

There are multiple and overlapping understandings and uses of the term digital literacy, e.g., digital skills, digital competencies, ICT skills, or 21st-century competencies. Nevertheless, digital literacy can be defined as a type of social practice that requires the ability to read and write via digital technology, which involves the access to and use of digital devices, resources, and materials (Milenkova & Lendzhova, 2021). In this respect, being digitally literate means being digitally competent enough to match the pace of such changes in society. According to Richards (2010, p. 518), a digitally literate individual “practices [the] conscientious use of technology, demonstrates [the] responsible use of information, and maintains a good attitude [toward] learning with technology”. Accordingly, pairing digital literacy with education has created so called digital education or technology-enhanced learning, where the use of digital technologies to provide education, including systems (i.e., learning management systems), tools (i.e., applications for communication or learning activities), or course artifacts (i.e., digital activities and interactions) (Online Learning Consortium, 2021a).

Within the Saudi education context, fostering digital literacy and digital skills have been listed in the Kingdom's government agenda since 2007. A country-wide project for general education known as the King Abdullah bin Abdulaziz Project for General Education Development, or the Tatweer Project 2007-2023, aims to achieve a higher integration of ICT into the Saudi curriculum. The project targets the primary school level, special schools for people and children with disabilities, and training for teachers to promote the ICT skills that are necessary for better educational services. According to 2020 International Telecommunication Union (ITU) data, 78% of individuals in the Kingdom have at least basic ICT skills, 64% have standard ICT skills, and only 14% have advanced ICT skills. The Kingdom thus expects these numbers to increase by aiming for at least 90% of these individuals to have basic ICT skills by 2024 (Unified National Platform, 2021). Moreover, its previous programs and initiatives have allowed the Kingdom to be among the top ten countries with digital skills in the rankings of the Global Competitiveness Report of the 2020 World Economic Forum (Schwab & Zahidi, 2020).

3.2 Digital Inclusion Plan

Concomitant with its national plan for using digital inclusion to build a modernized and digitalized society, the Kingdom's digital inclusion program aims to expand digital services to ensure that all its citizens and residents have the right to obtain easy and affordable internet access. The Saudi Ministry of Communications and Information Technology (MCIT) has thus initiated the Wireless Broadband project (WBB) to narrow the digital divide and serve rural and remote areas in the Kingdom. To ensure maximum accessibility and digital inclusion, the project offers ICT services with an average internet access speed of 10 megabits per second (Mbps) per rural household within the targeted areas (Sustainability Report, 2019). When responding to the pandemic, the CITC engaged in intensive work to enable students and teachers to continue their educational process and ensure that no one was left behind. Therefore, to support all individuals in the Kingdom during the COVID-19 pandemic, it provided no-cost access to government platforms for distance learning, including the unified education system and the national education portals (IEN) and the Madrasati, and Rawadhti platforms. Indeed, during the pandemic, the average daily per capita consumption of mobile data was 920 MB, more than three times the global average (Communication & Information Technology Commission, 2021).

Due to the widespread urbanization of the majority of the Saudi population, the Kingdom's infrastructure capacity is high compared to that of other countries (Communication & Information Technology Commission, 2021). The Kingdom of Saudi Arabia has thus been ranked among the top ten developed countries globally for its robust digital framework and network coverage. According to the International Telecommunication Union, 100% of the population is covered by a mobile-cellular network. Specifically, 99% of the population is covered by at least a 3G network, and 98% of the population is covered by at least a 4G mobile network (International Telecommunication Union, 2020). This broadband infrastructure also reflects the rapid growth of 5G mobile services, as Saudi Arabia ranked 4th in the world for 5G internet speeds in Q4 of 2020, with an average of 264.7 Mbps (Communication & Information Technology Commission, 2021). However, despite the reliable digital capabilities that had facilitated its digital transformation of education, the Kingdom's education system was not ready to accommodate the abovementioned sudden and unprecedented demand on networks to reach such a large number of simultaneous users. The MOE ultimately resolved this issue by utilizing cloud services to host the Unified Education System to maximize network loads and high-quality transmissions (Ministry of

Education, 2020). Overall, such initiatives created a solid ground for launching a digital system to support the sustainable education of more than seven million students during the crisis (Mann et al., 2020).

4. Education Beyond 2020

4.1 Changing for the Better

Looking forward, Saudi Arabia intends to learn from this period of school closures by identifying effective mitigation measures for any reoccurrences and updating its emergency planning for school facilities. Through an optimistic lens, the MOE has viewed this crisis as “a real opportunity to rebuild the educational system to ensure its strength, productivity, and quality” (Ministry of Education, 2020, p. 5). Three phases have been planned to reduce the impact of the pandemic on the education system. The first phase is coping. The transformation to distance education involved multiplying demands and required technical support to ensure equal-access distance learning. The second phase is mitigation. This phase focuses on reversing education losses by targeting teachers and adopting a curriculum with a high level of technology usage that has been prepared by the National Center for Professional Educational Development (NCEPD). The last phase is aftermath. This phase plans for a long-term policy change following the COVID-19 pandemic, a historical incident that has profoundly changed the global perspective on education.

Recently, in a post-COVID initiative, the National eLearning Center has established regulations and quality standards for online learning practices in public and private education. These standards include ensuring that teachers, school leaders, and educational supervisors receive adequate training in technology usage, e-content development, and e-teaching skills (Online Learning Consortium, 2021b). These quality standards also regulate the pairing of digital and traditional styles of teaching to support building resilience within the educational system that extends beyond the pandemic. Even after the reopening of schools and the return to normal classes, all the digital platforms that were created at the national level during the online learning period are still functioning. Students and teachers thus maintain their access and communicate virtually at an occasional pace. Moreover, digital materials and tools have notably been paired with on-site school instruction, assessment, and planning. Finally, as a result of the crisis caused by COVID-19, major innovative movements have been considered and listed on the agenda of the National e-Learning Center’s (NELC’s) Future eLearning Action Framework, which advocates the use of a digitalized philosophy to rethink all future possibilities. The framework includes the following:

- Create pathways for innovation in online teaching and learning and foster a culture of innovation among administrators, teachers, and students.
- Ensure equitable resource allocation (physical devices, teacher training) across urban and rural schools.
- Provide incentives and/or compensation for teacher training and professional learning that are related to online instruction.
- Develop and implement policies and processes at the national and local levels to encourage interactions in online classes and ensure opportunities for teacher-to-student and student-to-student interactions.
- With regard to national and local specifics, review the quality standards (rubrics, scorecards, research, etc.) shared by international online learning experts, groups, and/or organizations.
- Increase the drive and incentivization for innovation on the part of administrators, staff, and teachers.
- Implement best practices that are identified by online learning experts to ensure the quality of online learning by basing benchmarks on these best practices.
- Encourage teachers to be more pedagogically or technologically innovative to promote a supportive climate and culture for teacher innovation and encourage them to innovate their instructional designs.
- Develop a teacher learning community program to build capacity for online learning tools and innovative pedagogical approaches.
- Develop technology-facilitated, web-mediated guidance and instruction programs to integrate relevant principles into meaningful and sustained online learning (Online Learning Consortium, 2021b)

4.2 A Futuristic Vision

The pandemic has shed light on the breadth and depth of the digital capabilities that can reshape the future of education. This future aligns with the third pillar of Saudi Vision 2030, “An ambitious nation”, which directly refers to how the benefits of the digital transformation will create a diversified, innovative and world-leading nation for the benefit of future generations. The Saudi Vision 2030 plan, first released in 2016, strongly emphasizes the role of digital transformation in the most sensitive sectors in the country, such as government, economy, health, and education (National Transformation Program, 2020). The vision expresses ambitious yet achievable long-term goals and expectations for

enhancement. Special attention is given to the strength of home-school relationships, which will be enhanced by deepening parent participation in the education of their children. One of the long-term goals in the vision is that 80% of Saudi parents will be engaged in both the school activities and learning processes of their children by 2030 according to the program known as “Irtiqaa”, the Arabic form of “upgrade”, which measures how schools are engaging parents effectively in their children’s education. The vision thus makes a strong commitment to developing digital infrastructure to advance e-learning and to invest in the education of the new generation; hence, it states, “We want Saudi children, wherever they live, to enjoy higher quality, multifaceted education” (Saudi Arabia’s Vision 2030, 2016, p. 36).

Despite the multiple challenges associated with the prolonged lockdown, the massive efforts of individuals—teachers, families, and administrators—to sustain education and keep students connected to schools are worth mentioning. Everybody’s perspective has now changed following this historical incident. Cooperation with families has reached an unprecedented level. Every person is now engaged, plays a role and has developed a level of understanding of the other parties’ roles and how to identify critical gaps (Ministry of Education, 2020). In sum, the COVID-19 crisis has expedited digital transformation in Saudi Arabia, which has made major steps toward digitization within its system of education that might not have been taken at such an extraordinary pace under normal circumstances (Yezli & Khan, 2020).

5. Conclusion

In retrospect, and as a lesson learned, sustaining school operations in challenging situations such as natural disasters, conflicts, or even the spread of highly contagious viruses must be considered and prepared for to the best extent possible (UNESCO, 2020). As we all have seen, the pandemic has had uneven impacts across the globe; for example, it has victimized school-aged children and threatened their right to a stable education, especially in highly infected areas with prolonged school suspensions and severe economic crises (OMEP Executive Committee, 2020). Such impacts may exceed educational losses to also affect national security, as “uneducated masses may contribute to instability—or ‘fragility’—in weak states or countries emerging from crisis” (Burde et al., 2017, p. 621). Accordingly, to prevent a crisis from becoming a generational catastrophe, educators should consider developing a plan that supports the implementation of emergency online schools for young learners (Rush et al., 2016). Furthermore, a postpandemic pedagogy might consider all forms of digital education and e-learning as pathways to new landscapes in education rather than emergency responses (Murphy, 2020).

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