Education 2.0

Chronicles of Technological and Cultural Change in Egypt

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1. Introduction: Learning from Egypt's Historic Education 2.0 Reforms

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Abstract

In September 2018, Egypt's Ministry of Education and Technical Education (MOETE) began rolling out elements of a 'new education system' or 'Education 2.0'. This chronicle of Education 2.0 provides a rare glimpse into a state-led national education reform oriented towards digital transformation and infrastructure expansion, curriculum change and teacher Professional Development, and culture change. The chapter lays out the political, policy, and social context in which the reforms unfolded, happening in the wake of the Arab uprisings, and in keeping with the United Nations Sustainable Development Goals and Africa Agenda 2063. The research draws on oral histories from the 'top down' and 'bottom up' with figures from the state, society, and international and private sector partners. It finds that in a rapidly changing, oftentimes harsh, and unpredictable world, it is imperative to continue to strive for a social contract in education oriented towards human dignity and a genuinely sustainable future, for our collective survival depends on it.

Keywords

Africa, digital transformation, distance learning, Education 2.0, Fourth Industrial Revolution, sustainable development, oral history, Sustainable Development Goals

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1. Embarking on a Bold Education Reform

> What people do not understand is that what we did was a miracle, an absolute miracle. (Tarek Shawki, Chapter 2)

In September 2018, Egypt's Ministry of Education and Technical Education (MOETE) began rolling out elements of a 'new education system' (*al-nizam-al ta'alim al jadid*) also known as 'Education 2.0'. This bold attempt to reimagine and redesign the system of Kindergarten through to Grade 12 had not been attempted for well over half a century. The idea was to raise the quality of a long deteriorating and over-stressed education system while transforming the culture of learning in ways that would prepare the society for the unpredictable yet unstoppable changes occurring in the realms of work, communications, economy, and society associated with the Fourth Industrial Revolution (4IR) (Rizk and Ayman 2023). The reforms were implemented at scale, an audacious undertaking since Egypt's education system spans a diverse social and economic landscape with over 25.6 million students, 1.4 million teachers, and 57,000 schools (in 2023). It is by far the largest education system in the Middle East and North Africa (MENA) and the second largest in Africa, after Nigeria. In material terms, public education is exceedingly under-resourced and suffers from acute classroom overcrowding, an ageing infrastructure, and chronic teacher shortages.[1] This new system, with its skills-based curriculum, teacher professional development on new learning approaches, updated system of technical and vocational education and training (TVET) (Technical Education 2.0), and digital transformation, 'the combined effects of several digital innovations' (Hinings et al. 2018: 55),[2] would supposedly take Egypt on a 'journey to the future' (Shawki 2019).

1 Between 2004-2021 the state instituted a freeze on hiring permanent teachers in favor of contracting temporary hires. This resulted in an enormous deficit of over 170,000 teachers and has turned the profession into precarious 'seasonal wage-seeking earners instead of stable professionals and partners in educational reform' (Alternative Policy Solutions 2024). It is projected that between 2022 and 2027, 462,000 new teachers need to be hired, and 362,000 new classrooms need to be built (MOETE 2023: 190). As of 2025, these numbers are nowhere near on track to be realized. For more on the teacher shortages, see Sayed (2024). With over 51% of the population in Egypt are under twenty-five years, there will be a continued demand for teachers.

2 For a more comprehensive definition of Digital Transformation (DT) see Gregory Vial who defines it as 'a process that aims to improve an entity by triggering significant changes to its properties through combinations of information, computing, communication, and connectivity technologies' (2019: 121).

This chronicle of Education 2.0 provides a rare glimpse into a state-led national education reform. The volume is informed by the questions: What big ideas and theories of change underpin the Education 2.0 reforms and where did they come from? Who were the figures driving the change, and what did they hope to achieve? What did students, teachers, and families understand about the reforms, and how did they interact with them? What does this national experiment reveal about state-society relations and the social contract around the purposes, expectations, and future of education?

From its inception, the state's intention was not merely to 'reform' the outdated education system, but to 'transform' it (Fig. 1.1). As put forward in the first strategic document issued by the Ministry of Education and Technical Education in May 2018,

> Egypt is going to transform its public education system. From kindergarten grades to the end of schooling, the content of what is learned will be brought up to date and made relevant to the challenges of the 21st century. Higher order skills and capabilities will replace the current focus on rote learning and factual recall. The way in which pupils learn and are assessed will be transformed, with technology playing a central role for every child and teacher. The transformation journey will take from now until 2030. We will start this year, with a new early years curriculum and replacement of the Thanawiya Amma school leaving exam (MOETE 2018a).

Fig. 1.1 KG classroom with the new Education 2.0 books and seating arrangement. Photo by Linda Herrera, Cairo, 2018.

More than a conventional reform, Education 2.0 also set out to reengineer the sector's political economy. As asserted by the Deputy Minister of Education Ahmed Daher, Education 2.0 constituted a mega state development project akin to building the Aswan Dam or the Suez Canal (Chapter 18). It involved laying fiber optic cables throughout the country to provide schools with WIFI connectivity and servers, establishing data centers for managing and storing the massive amount of digital content from its online platforms, building brick and mortar factories and technical schools to produce the hardware, software, and labor force needed to stimulate the education market, and creating a state-of-the-art media studio from the ground up to produce thousands of videos to support the 'open school' concept (see Chapter 22).[3] Between 2018-2022, the MOETE achieved massive operational feats as it equipped high schools across the country with 9,246 laboratories, 36,210 smart boards, and 27,439 upgraded classrooms (SIS 2024). As of 2024, it distributed 3.3 million tablets to first-year high school students.

The person tasked with overseeing the first critical phase of Education 2.0 was Dr. Tarek Shawki, an engineer by training and avowed tech evangelist.[4] Shawki had previously held positions at UNESCO as Director of the Regional Bureau for Science in Arab States (2008-2012) and Chief of the Section for ICTs in Education, Science and Culture (2005-2008). Prior to that he was a professor of Theoretical and Applied Mechanics at the University of Illinois at Urbana-Champaign (1986-1998) (see Chapter 2 and Chapter 4).[5] He distinguished himself nationally by getting the mega knowledge project, the Egyptian

3 UNESCO announced the opening of 'The Educational Content Studio' on 1 April 2024 at the Professional Academy of Teachers (PAT). The studio is part of the UNESCO-Huawei Technology-enabled Open Schools for All Project (UNESCO 2024).

4 As he elaborates in his 2015 Ted Talk, 'Learning for Life', Shawki has been a tech-evangelist (or 'techno-optimist', 'techno-solutionist', 'techno-utopian') for as long as he can remember. This designation refers to 'someone who celebrates technologies and believes in the power of technological solutions to redress social problems and create improved, more efficient, and more prosperous societies with little recognition of the darker and dystopic sides of those technologies' (see Herrera 2022: 14).

5 See video excerpts of Tarek Shawki talking about his time working on EdTech at UNESCO (https://www.youtube.com/watch?v=w7ys6gqo8ao) and at the University of Illinois during the birth of the Internet (https://www.youtube.com/watch?v=QmCRIsRZYoU) on the Education 2.0 Research and Documentation YouTube channel.

Knowledge Bank (EKB), off the ground. Launched in January 2016, it initially served Egyptian universities, institutes, and research centers, but later grew to include K-12. It was the largest public digital library and knowledge hub with content in English, Arabic, and French from 120 databases and thirty-one publishers.[6]

Shawki was appointed Minister of Education and Technical Education in 2017 and given the herculean task of turning around the nation's overstretched and under resourced education system by building a 'new education system'. He immediately took to the airwaves and social media to proselytize for a 'revolution' in education (Shawki 2019). But as anyone familiar with a top-down revolution understands, it is an uphill battle to convince people of the efficacy of your vision, let alone steer cultural and behavioral change in a prescribed way. Culture change cannot merely be reengineered in a top-down manner through technology integration, media campaigns, investments, and feats of planning. These sorts of interventions can lay the groundwork for change, and digital transformation invariably influences and changes human behaviors (Vial 2019), but culture change is unpredictable and multidirectional. Moreover, as witnessed during the popular uprisings of 2011-2013, the social contract between the state and its citizens has long been strained and suffers from a 'trust deficit'.[7]

When news of the ambitious reform reached the public in 2018, people seemed weary. Even though they constantly grumbled about the old system, parents complained that the reforms would not solve the issues they cared most about and worried they might change the rules of the game in ways that could disadvantage their children. As the Minister explained,

> Parents were angry because we were giving them one thing, while they wanted something else. For instance, in 2018, after we deployed the first set of new textbooks for KG1, KG2, and Grade 1, we were surprised to learn that people did not seem to be interested in this at all. [...] They were talking more about infrastructure issues like the distance to school and the condition of the facilities, not about learning and skills. [...]

6 The EKB, an 'Egyptian made and managed platform' (El Zayat 2020), is a publicly funded project that partners with private companies and contractors for its day-to-day functioning (El Souefi 2024).

7 For some examples of the fraught social contract in Egyptian education, see Herrera 2022, Ibrahim 2021, Krafft 2012, Sobhi 2023.

> We needed to address the cultural understanding of schooling and to convince every parent that their kids should go to school to learn, not just to get a degree and a status. […] When parents prioritize having their kids get that degree in the shortest route possible, this opens the door for a lot of corruption like cheating and automatically passing kids, even when they cannot read (Chapter 2).

Public trust in the new system was further strained by inconsistent messaging, misinformation, and rumors that circulated on social media (Boraie and Zayat 2021, Chapter 12, Chapter 24, Chapter 25). The Minister tried to control the message by directly engaging with the public on Facebook and WhatsApp. He was a member of no less than three thousand WhatsApp groups. He would post comments and join discussions at all hours of the night. He explained, 'I felt I had to engage and answer their questions. But the more I answered, the more they attacked me and the nastier they were' (Chapter 2). When looking back on his time as Minister, Tarek Shawki muses, 'Sometimes it is better to speak to people without the government hat. I learned that once you are in the government, people consider you the enemy, or they suspect you are the enemy' (Chapter 2).

Teachers who are no strangers to reforms, also viewed the Education 2.0 'transformation' with skepticism. They have witnessed countless initiatives over the years, all while their professional status and wages have been tumbling in a free fall. Despite some short trainings, teachers were ill-prepared for the changes. The twenty-eight Faculties of Education (FoEs) which prepare teachers to work in the nation's schools, were not even aware that something called Education 2.0 was underway (Chapter 27 and Chapter 29, Zaalouk et al. 2016). This was partly because FoEs are administratively under the Ministry of Higher Education which is governed by the Supreme Council of Universities (SCU), whereas the K-12 system is under the auspices of the MOETE. Shawki himself pointed to the lack of coordination between the different parts of the education system, describing it like 'an orchestra without a conductor'. He said, 'There might be a phenomenal soloist in the orchestra, but these hundreds of musicians cannot play together. This leads to disharmony. We do not have any coordination' (Chapter 3).

Perhaps even more challenging than the lack of coordination of the formal parts of the system, is the 'informal' parallel system of private

tutoring, '*durus khususiya*', also known as the 'shadow education system' (Bray 2006 and Bray and Kwo 2013). This system operates according to its own system of rewards, organization, ethics, economy, and hierarchy. As reported in the education sector report of 2023, 'Among households with children in public schools, private tutoring accounts for a staggering 49% of total education spending compared to only 10% for those with children in private schools' (MOETE 2023: 65). While it permeates all educational levels, private tutoring is most prevalent at the high school level because of the high stakes Thanaweya Amma exam (a high school leaving/university entrance exam). There is also a spike in private lessons for the Grade 9 exams which determine if students will be tracked into a technical or university bound high school.[8] Neither the Ministry of Education nor any other entity have been able to effectively regulate or control the ubiquitous market of private lessons, though many have tried.

A system built around high stakes exams tends to come with ancillary problems of academic dishonesty and cheating (El-Kholi 2018).[9] The Minister initially thought he could leverage technology to eliminate cheating by administering electronic exams which allow for 'human free' grading. However, instances of leaked exams, technology hacks, and widescale cheating persisted (Chapter 24, Chapter 25, Chapter 26).[10] In a system that many students experience as unfair and arbitrary, 'cheating' is not an entirely straightforward concept. For instance, a high school student describes how his classmates smuggled non-regulation notes and books into an exam hall but did not see what they were doing

8 Scholars have been writing about the phenomenon of private lesson markets in Egypt for decades, if not longer. For a selection of works on this topic from different perspectives, see Assaad and Krafft 2015, Farag 2006, Hartmann 2008, Herrera 2022, Sieverding et al. 2019.

9 There are numerous studies on cheating and perceptions of academic dishonesty. For example, see Yousry 2012 and Zayed 2024. In relation to the SAT exams, see Cairo Scene 2017.

10 In a well-publicized incident in 2022 for example, the head of a middle school Examination Committee and deputy headmistress of a secondary school for girls, Ms. Wedad Hamdi, enforced anti-cheating measures which included preventing students from bringing their mobile phones to the exam hall. She received threatening text messages and faced an angry throng of parents outside the school ready to assault her. She had to leave the school by police escort and rode off in an armored vehicle. After the incident, the minister spoke with her in an interview about how students smuggle in phones and use computer applications during exams. He proclaimed, 'We are speaking about a phenomenon' (Shawki 2022).

as unethical. He explains, 'The reason we did this was because we do not trust the system that makes the rules. [...] We were not trying to be immoral or something but just playing by our own rules. We did not trust the thinking behind the decisions. We did not think the rules they set were valid' (Chapter 26).

In August 2022, after nearly five years in office (2017-2022), Tarek Shawki, a driving force behind the Education 2.0 reforms, was replaced during a cabinet shuffle (see Chapter 2 and Chapter 6). His successor Dr. Reda Hegazi (2022-2024), who had been Deputy Minister of Education for Teachers' Affairs, belonged to the previous Education 1.0 system and was never a strong advocate of Education 2.0. But since the reforms were integral to the state's 2030 development plan, he was mandated to follow through with them, though they continued on a bumpier road. On 2 July 2024, Reda Hegazy was replaced as Minister by Mohamed Abdel-Latif who had previously worked in the private sector as Executive Director of the Nermin Ismail Schools Group, a franchise owned by his mother.[11] Abdel-Latif's appointment was immediately mired in controversy after local fact-checkers alleged that his doctoral degree was from a fake university and his master's degree could not be verified (Hendi 2024, Mansour 2024, Middle East Eye 2024). As of writing in mid-2025, Minister Abdel-Latif is dismantling many aspects of Education 2.0, including the books that were intended to serve the country through 2030. The digital transformation elements of Education 2.0 continue under the stewardship Deputy Minister Ahmed Daher who has been especially active in integrating Artificial Intelligence (AI) systems into schooling for more personalized learning (Daher et al. 2025) (see below).

2. Sustainable Development in Egypt's New Republic

The call to overhaul Egypt's education system emerged at a critical juncture in the history of the MENA region and needs to be placed in a broader regional and global context. Starting in Tunisia in December 2010 and continuing through 2013, a groundswell of popular uprisings

11 Mohamed Abdel-Latif's maternal grandfather was Field Marshal Ahmad Ismail Ali, Egypt's Minister of War during the 1973 Yom Kippur War. Many have speculated that his family's connection to the military, rather than his professional qualifications in education, accounted for his appointment to the role of Minister.

spread in Egypt, Syria, Libya, Yemen, Bahrain, Palestine, and beyond. Multitudes of young people joined by scores of others, took to the streets and social media to express their grievances about the lack of employment opportunities, widespread corruption, poor quality education, the absence of basic rights and protections, and their inability to lead a life of 'dignity' (*karama*). The people demanded *Ayesh, Huriyya, Idala Ijtimaiyya* ('Bread, Freedom, Social Justice'). The 25 January 2011 Revolution in Egypt resulted in the toppling of the thirty-year presidency of Mohamed Hosni Mubarak (1981-2011) and set into motion a series of upheavals over the succeeding years.[12] From 2011-2014, Egypt witnessed three constitutional conventions,[13] three election cycles, four heads of state,[14] and from 2011-2017, seven ministers of education.[15]

In 2014 as the dust began to settle, the Arab Republic of Egypt entered 'a new era'. Under the presidency of Abdel Fattah El-Sisi, former Field Marshal and Director of Military Intelligence, the post-revolution government proclaimed itself the legitimate bearers of the revolution,[16] though detractors point to this period as the start of the

12 A large number of scholarly works deal with the causes and manifestations of the Arab uprisings and peoples' calls for dignity and justice. For example, see Badiou 2012, Bayat 2017, Herrera 2014, and Tripp 2013.

13 For a timeline of constitutional developments between 2011 to 2014, see the 'Constitutional History of Egypt' at *Constitutionnet*, https://constitutionnet.org/country/egypt#:~:text=Key%20Country%20Documents%20Index%20*%20Constitution%20of,declaration%20(July%202013)%20*%20More%20Egypt%20Documents

14 Between 2011-2014, the four heads of state were the Supreme Council of the Armed Forces headed by Field Marshal Mohamed Hussein Tantawi (2011-2012), Mohamed Morsi, formerly of the Muslim Brotherhood (2012-2013), Interim President Adly Mansour (2013-2014), and Abdel Fattah El-Sisi, former Field Marshal (2014-present).

15 From the time of the Egyptian uprising of 25 January 2011 to the appointment of Tarek Shawki as minister of education in 2017, there were seven ministers of education as follows: Ahmed Zaki Badreldin (2010-2011), Ahmed Gamal El-Din Moussa (2011), Gamal El-Araby (2011-2012), Ibrahim Ghoneim (2012-2013), Mahmoud Abo El-Nasr (2013-2015), Moheb Al-Rafei (2015), and Al-Hilali El-Sherbini (2015-2017).

16 The preamble of the 2014 constitution reinforces this view with the words: '… [O]ur patriotic army delivered victory to the sweeping popular will in the Jan 25–June 30 Revolution that called for bread, freedom and human dignity within a framework of social justice and brought back the homeland s free will' (Arab Republic of Egypt 2014).

'counterrevolution'.[17] As the state thwarted dissent movements and clamped down further on citizens' rights, it also pursued ambitious mega projects to forge a 'New Republic' (*al-jumhuriyya al-jadida*).[18] These mega projects spanned several sectors including transportation (through the construction of new roads and bridges and expanding the Suez Canal), urban development and real estate (by erecting new 'smart cities' including a new administrative capital),[19] public health (with the launching of the 100 million health campaign to combat Hepatitis C, developing a universal health insurance system, and opening new hospitals), tourism (through building new museums and expanding touristic sites),[20] rural development (through initiatives in the Egyptian countryside),[21] and digital transformation (through national projects such as Digital Egypt).[22] The state project of building a 'new education system', was arguably the most challenging of all.

Egypt had been faring well in education in terms of net enrollments rates which exceeded 99% for the primary level (UNESCO 2021). In the category of 'quality of education' however, as measured by different global rankings, the country's education system was in dire straits. Recognizing that rankings carry serious biases and power imbalances, they can nevertheless expose systemic problems. For example, according to the 2013-2014 Global Competitiveness Report which is primarily concerned with a country's economic performance, Egypt ranked 148 out of 148 countries in the category of 'quality of primary education'

17 For works on the counterrevolution in Egypt, see Mandour 2024, Said 2023, Wahba 2023 and el-Hamalawy 2026.

18 On 15 July 2021, President Abdel Fatah El Sisi declared Egypt a 'New Republic' when inaugurating its 'Decent Life Initiative' to upgrade and develop the Egyptian countryside.

19 For an excellent history of how government policy has spurred Egypt's housing crisis, see Shawkat 2020.

20 There have been several museum openings in different governorates of Egypt (Egypt Today 2020). The two most notable museum projects are the Grand Egyptian Museum (GEM) and the National Museum of Egyptian Civilization (NMEC).

21 The sheer amount of borrowed money to undertake all these mega projects has contributed to the devaluation of the Egyptian pound and exacerbated economic inequality (Mandour 2024).

22 See the Ministry of Communications and Information Technology's Digital Egypt platform at https://mcit.gov.eg/en/digital_Egypt

(Schwab and Sala-i-Martín 2016).[23] In the 2016 Progress in International Reading Literacy Study (PIRLS), Egypt ranked 60 out of 61 participating countries, and in the Trends in International Mathematics and Science Study (TIMSS) of 2019, Egypt ranked 34 among 39 participating countries on math, and 37 on science. These ranking underscored that a majority of students had 'not acquired the foundational skills to read to learn other subjects, presenting one of the biggest challenges in the education system' (MOETE 2023: 41). In other words, Egypt was part of a 'global learning crisis' defined as when more than half of the children are not able to read and understand a simple text by age ten (Saavedra 2019). Under these challenging circumstances, the state sought to forge a state-of-the art education system that would overcome the learning crisis while advancing a digitally oriented, market-based knowledge economy.

Egypt's ambitions are most clearly illustrated in the Egyptian Constitution of 2014 which puts a high currency on education. The word 'education' appears twenty times across seven articles (compared to ten mentions in four articles in the previous Constitution of 1971 Amended in 2007).[24] Education is couched in a language of 'global', 'international', 'standards', 'knowledge economy', and 'digital', as in 'eradicating digital illiteracy'.[25]

23 'The Global Competitiveness Report 2013–2014' is published by the World Economic Forum. It is included here because its vision aligns with the state's objectives of leveraging education to advance Egypt's economic position. Note that Egypt's position in the category 'quality of primary education' stood at 116 out of 140 countries in 2015-2016. It declined in 2017-2018 to 133 out of 137 (World Economic Forum 2017a). For a critical discussion on the orientation of the Global Competitiveness Report in education see Attalla 2013.

24 The articles in the 2014 Constitution pertaining to education include Article 19 on General Education which states 'Education is the right of all citizens', and the state will 'provide education in accordance with international quality standards'; Article 20 on Technical Education and Professional Training refers to 'global quality criteria' and the 'needs of the labor market'; Article 21 on Academic independence mentions 'providing university education in accordance with global quality criteria'; Article 22 on Teachers 'guarantees the development of their academic competencies and professional skills'; Article 23 on Scientific Research mentions the role of research in 'building a knowledge economy'; and Article 25 on Illiteracy states 'The state commits to developing a comprehensive plan to eradicate alphabetical and *digital illiteracy* [emphasis added] for all citizens from all age groups'.

25 A nation's digital literacy can be measured by using a Digital Intelligence Quotient (DQ), 'the sum of social, emotional, and cognitive abilities that enable individuals to face the challenges and adapt to the demands of digital life' (Cocorocchia 2018).

A constitution should be viewed as an aspirational document rather than evidence of actual practices and policies. For instance, Article 19 asserts that the state is committed to allocating at least 4% of the GDP on K-12 education, but the actual allocation has been closer to 2% and as low as 1.7% in 2024, well below international benchmarks (Human Rights Watch 2025). Nevertheless, key ideas articulated in the 2014 Constitution map directly onto the Education 2.0 reforms.

Whereas the Constitution captures the ideals of the New Republic, the blueprint for how to achieve its development goals is best represented in the 'Sustainable Development Strategy (SDS): Egypt Vision 2030' (MOPMAR 2016 and 2023). This development strategy is in line with the United Nations Sustainable Development Goals (SDGs), adopted by all UN Member States in 2015.[26] The concept of sustainable development first gained currency in 1987 with the Report, 'Our Common Future' (The Brundtland Report) of the United Nation's World Commission on Environment and Development. The core idea was that 'Humanity has the ability to make development sustainable to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs'. Endorsed by United Nations organizations, the World Economic Forum, the World Bank, and the OECD (Organization for Economic Cooperation and Development), this development model was supposed to be a win-win economic growth model since, in theory, it would integrate environmental safeguards and foster the social good. Despite initial good intentions, the weakness of this approach has been that it depends largely on voluntary 'political will', which has been in short supply. As stated in the report,

> [...] sustainable development is not a fixed state of harmony, but rather a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development, and institutional change are made consistent with future as well as present needs [and] must rest on political will (1987).

For a qualitative study on how educators in Egypt understand Digital Intelligence see al-Mousa 2024.

26 The seventeen SDGs address critical development challenges in areas including education, health, inequality, clean energy, and climate action. Goal 4 on 'Quality Education' seeks to 'Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all', see https://globalgoals.org/goals/4-quality-education/.

Since the concept of sustainable development entered the development lexicon, the world has undergone an extreme rise in inequality, job displacement, mass human migrations due to economic, security, and environmental factors, and precipitous degradation of the planet (Piketty 2014, Standing 2017, WWF 2024). Several alternative ideas and models of sustainable development are in circulation, such as the Other Davos, the BRICS-led New Development Bank, the World Social Forum, and the Blue Dot Network, to name a few. However, political elites in Egypt and most countries have for the most part rallied around a model of pro-growth sustainable development, often to detriment of people and the planet. Education systems are pushed to compete on the global stage where economic competitiveness takes precedence over well-being (Rizvi and Lingard 2009), and technology solutions and personal responsibility are prioritized over building social solidarity and shared sustainable futures (Herrera 2017).

Egypt Vision 2030 follows a standard model of pro-growth sustainable development. Its Pillar 7 focuses specifically on education and training for general and technical schools. The Key Performance Indicators (KPIs) in education range from developing a 'high quality education and training system' so that students and trainees will have the skills 'to compete with regional and international entities', to lowering the youth illiteracy rate to 0 and increasing Egypt's international education rankings (MOPMAR 2016: 172). Within the first few years of the Education 2.0 reforms, Egypt did indeed see some measurable increase in its rankings. According to the Global Knowledge Index (GKI) for example,[27] the country reached the 53rd position out of 154 countries in 2021, compared to 72nd position out of 138 countries in 2020 (Ministry of Planning and Economic Development 2023: 25). In the PIRLS 2021 assessment, Egypt achieved an increase of 48 points compared to its 2016 scores (with a placement of 37 out of 43 countries), equivalent to two years of learning gain. One analyst concludes that, 'While most countries suffered significant learning losses during COVID-19 […] a few improved their scores. […] Egypt is among the countries with improved achievement' and this is 'probably due to policy or system changes' (Patrinos et al. 2024: 5 and 17).

27 The Global Knowledge Index initiated in 2017, was developed by the United Nations Development Programme—Regional Bureau for Arab States (UNDP RBAS) and the Mohammed bin Rashid Al Maktoum Knowledge Foundation (MBRF). For more information see the UNDP website, https://www.undp.org/arab-states/publications/global-knowledge-index-2024

3. Digital Arab, Digital Africa

Egypt has been positioning itself across the Arab states and African continent as a vanguard of twenty-first century education in the domain of digital transformation. As early as 2018, Egypt partnered with Arab Gulf countries Saudi Arabia and Dubai to form the 'Arab Digital Union' to find ways of bringing together the Saudi Digital Library, Egypt's Knowledge Bank, and the Dubai Digital Library (see Fig. 1.2) (Government of Dubai 2018).[28]

Fig. 1.2 Members of the 'Arab Digital Union' representing the Saudi Digital Library, Egypt's Knowledge Bank (Tarek Shawki center), and the Dubai Digital Library, 2018, Wikimedia Commons, CC BY-SA 4.0, https://commons.wikimedia.org/wiki/File:Arab_Digital_Union.jpg#/media/File:Arab_Digital_Union.jpg

Egypt's Ministry of Education also initiated partnerships with education ministries and civil society groups in the African Union (AU) as they pursued policies towards 'Digital Africa'.[29] The AU's flagship report,

28 The initiative for the Arab Digital Union was announced during the 2018 Knowledge Summit in Dubai, 'Youth and the Future of the Knowledge Economy'. It was organized by the Mohammed Bin Rashid Al Maktoum Knowledge Foundation (MBRF) (Government of Dubai 2018).

29 For example, in February of 2020 Egypt co-hosted the conference, 'Accelerating Learning in the Middle East and Africa: A Call to Action and Opportunities for Regional Collaboration', attended by dozens of ministers of education, policy makers, and civil society representatives, sector experts, and development partners from across MENA and Africa. The conference was under the auspices of the President of the Arab Republic of Egypt, the World Bank, and Egypt's

'The Digital Transformation Strategy for Africa 2020-2030', elaborates the need for developing 'technology-supported learning', 'creating and scaling-up eLearning platforms', and ensuring that 'digital knowledge products and learning opportunities reach people from diverse educational, social backgrounds and regions' (AU 2020: 23). The cover of the report is of a humble schoolgirl smiling as she uses a tablet in a remote mountainous area, an image that conveys the message that digitization will change the lives and learning of children across different social groups and environments (see Fig. 1.3).[30]

Fig. 1.3 Cover of the *Digital Transformation Strategy for Africa* (Addis Ababa: African Union, 2020).

Minister of Education and Technical Education, and in collaboration with the United Kingdom's Foreign and Commonwealth Office (FCO). The author attended this conference and served as the moderator of the closing session, 'Accelerating Learning through Collaboration'. See https://www.worldbank.org/en/events/2020/01/29/accelerating-learning-in-the-middle-east-and-africa

30 The Sustainable Development Strategy for Africa 2063, 'Agenda 2063' was adopted in January 2015. This fifty-year blueprint and development vision is divided into five ten-year implementation plans with specific goals and targets including advancing its digital infrastructure (AU 2015).

As countries race towards digitization, AI, cloud computing, and smart technologies, they often overlook or downplay the risks. Concerns abound about how digitization can exacerbate inequality, cause environmental degradation through e-waste, energy consumption, and water pollution, and create dependency on foreign technologies and companies which result in colonial style extraction of data with related risks to national security, children's privacy, and digital surveillance (Coleman 2019, Moon 2018, Shao et al. 2025). But of equal if not greater importance is that architects and advocates of education reforms often do not acknowledge how digital transformation (DT) comes with 'both game-changing opportunities […] and existential threats' (Sebastian et al., 2017:197). The integration of digital tools and technologies into education systems radically changes relationships, social learning, knowledge systems, and pedagogy, and carries profound ethical, political, and economic implications (Selwyn 2016 and 2025, Pangrazio and Selwyn 2023). As scholars of management and organizational theory posit, DT opens the door to

> novel actors, structures, practices, values, and beliefs that change, threaten, replace or complement existing rules of the game within organizations, ecosystems, industries or fields....[T]he combined effects of digital innovations lead to the emergence of new organizational forms, new institutional infrastructure, and new institutional building blocks. […] [D]igital transformation is without doubt, institutional change (Hinings, Gegenhuber and Greenwood 2018: 55, Greenwood and Hinings 1996).

Whereas digital transformation of education in 'normal times' would have taken years of deliberation to build public and political consensus, plan for institutional change and retraining, establish legal, and economic guardrails, with the COVID-19 pandemic it moved at breakneck speeds. This conversation shifted away from if and how digital solutions should be applied, towards a mode of rapid 'technological solutionism'.[31]

Schools in Egypt closed on 15 March 2020 and made the transition to online and hybrid learning.[32] The country was relatively well prepared for this transition. In a press conference to announce the details of

31 The term 'technological solutionism' was coined by Evgeny Morozov (2013). It refers to an ideology that technology and engineering solutions can be efficiently used to solve complex problems without regard to history, culture, context, and politics, and without human debate.

32 According to UNESCO, over 1.5 billion students and youth worldwide were affected by school and university closures. The majority of governments from 133

how Egyptian education would continue the academic year remotely, Minister Shawki proclaimed: 'This is a unique experience in terms of learning. Besides getting us to the next year [...] I think we can transform the current crisis into a positive thing' (Shawki 2020a).

In rapid succession, the ministry launched six e-learning platforms and two educational television channels (Chapter 22). UNESCO recommended that schools adopt Edmodo, a 'free' platform with an interface similar to Facebook, as their Learning Management System (LMS). Edmodo allowed teachers to share content in virtual classroom spaces, distribute quizzes and assignments, and manage communication with students, colleagues, and parents. In 2019, the company reported that it had more than one hundred million users worldwide. It announced its partnership with Egypt through a Tweet on 19 March 2020 stating, 'Starting today, Edmodo will be rolled out to over 22+ million students and over 1+ million teachers in the country to provide distance learning support in the period of school suspension and to enhance learning thereafter' (PR Newswire 2020).[33] However, Edmodo would become a cautionary tale of what can happen when a national education system outsources educational services to a third party (Hill 2022). On 22 September 2022, Edmodo announced that it was shutting its operations and permanently deleting all accounts. It gave assurances that personal data would not be sold to third parties, yet this was a difficult claim to verity.[34]

countries came up with a mix of online, television, and audio solutions (UNESCO 2022).

33 NetDragon's technology partner in the Middle East was Innovera, an EdTech technology manufacturing, application development, and healthcare software development company. The company made their resources 'available to support the MoE, schools and teachers with the training and helpdesk to ensure a smooth implementation and long-term usage of Edmodo within Egyptian schools' (PR Newswire 2020). Note that not all eligible students and teachers subscribed to the Edmodo platform. According to the minister, 11.5 million students, 1.16 million teachers, and 750,000 parents subscribed to it to access classes and deliver the student projects (Shawki 2020b).

34 The US government's Federal Trade Commission (FTC) brought a legal case against Edmodo for being in violation of The Children's Online Privacy Protection Act of 1998 (COPPA) and mishandling children's data. It reached a settlement of a $6 million penalty and the FTC 'ordered Edmodo to delete models and algorithms developed using personal information collected from children without verifiable parental consent or school authorization, change a number of its practices, and adhere to the FTC's reporting requirements'. This order sent a clear message regarding the FTC's expectations for edtech providers, but applied specifically to the US (Lee and Marlowe 2023).

Egypt vigorously continues its digitization efforts. During the national launch of the 'Digital Egypt' platform which provides services for all citizens, President El Sisi spoke emphatically about the importance of education in the state's goal of transforming Egypt into a 'digital society' (Chapter 23, SIS 2022).[35] In 2022, the Ministry of Education developed a draft ICT strategy to show how it envisioned an integrated system of synchronous and asynchronous learning with the EKB serving as the hub and a feedback loop whereby user data analytics would regularly be analyzed to update the system (see Fig. 1.4).[36]

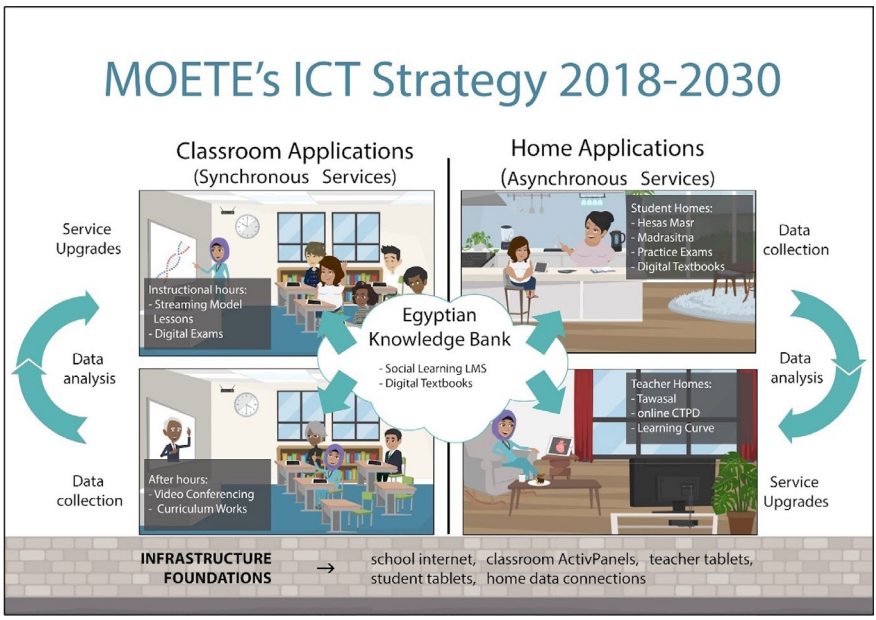

Fig. 1.4 Graphic explaining how to integrate technology into Egyptian education, from the MOETE's Draft ICT Strategy for 2018-2030.

By 2025, the ministry pivoted more towards AI and unveiled 'Faheem', Egypt's first 'AI-powered personalized learning platform,

35 For a full stream of the launch event, see 'President El-Sisi inaugurates Ministry of Communications and IT projects "Digital Egypt"', 6 July 2022, YouTube, https://www.youtube.com/watch?v=whGEDX4Egpk&t=4s

36 In the interest of full disclosure, the author worked on developing the MOETE ICT strategy in her role as an international education advisor of the USAID Teach for Tomorrow project. The project worked closely with the Deputy Ministry of Education Ahmed Daher in 2022 to craft the strategy.

designed to address critical limitations within the K–12 educational system', developed in collaboration with Microsoft. Employing the logic of technological solutionism, Faheem showcases technological and engineering solutions to challenges associated with crowded classrooms, teacher shortages, deficits in teacher education, and underperformance in student learning as measured by tests. AI is being presented as a means to 'operationalize policy goals set by Education Reform and UNESCO / UNICEF-aligned reforms, bridging the gap between technological potential and classroom realities' (Daher and Faheem Team 2025: 2). As elaborated in the Faheem report,

> The AI mimics effective teacher strategies (aligned to the teaching standards) by posing questions, encouraging exploration, and providing scaffolded guidance that mirrors classroom interaction. This instructional approach is intended to foster greater motivation, build academic confidence, and support student autonomy' (Daher et al. 2025: 5).

The Faheem initiative serves as an example of how digital transformation is being implemented as a means of managing problems without grappling with the 'radical institutional change' that accompanies its use.

4. Oral Histories from the 'Top Down' and 'Bottom Up'

> Oral sources tell us not just what people did, but what they wanted to do, what they believed they were doing, and what they now think they did (Portelli 2009).

This volume is based on oral histories, participant observation, and analysis of primary source materials collected during the first five years of the Education 2.0 reforms.[37] It interrogates how new ideas and practices concerning learning, pedagogy, knowledge production, and technology enter the public and political spheres and how local actors interpret, react to, and selectively adapt them, sometimes creating alternative ideas and practices along the way. It is divided into two sections. Part 1: Oral Histories of Education Policy Innovation and Change (Chapters 2 through 23) puts a spotlight on the leaders and architects of the new

37 The research is the product of the Education 2.0 Research and Documentation Project under the direction of Linda Herrera and with the participation of authors and co-authors of chapters in this volume (see Acknowledgements).

education system and the changing EdTech landscape. Part II: Teacher and Student Perspectives, elevates voices and experiences from within schools and local communities (Chapters 24–29).

As a methodology, oral historical inquiries revolve around an event or period in history. The Oral History Association (OHA) describes it as 'a field of study and a method of gathering, preserving and interpreting the voices and memories of people, communities, and participants in past events' (OHA n.d.). For purposes of this study, the 'past event' refers to the first phase of the Education 2.0 reforms (2018-2023). The participants include figures involved in key decision making, experts who developed curricular frameworks and materials, engineers who built and ran the digital systems, and students, teachers, and parents who were at the receiving end of the reforms. While participants recount stories from the 'past', it is the recent past going back sometimes to 2014, and at other times to an event from months, weeks or days earlier.

Another common feature of oral history is that it usually draws out peoples' stories and memories to construct a social history from the 'bottom up' (ElSadda and Sabea 2018, Masalha 2008, Portelli 1981 and 2009). In the context of this research, we view the 'bottom up' as reflected in the voices of students, teachers, parents, and other members of school communities (Chapters 24–29). However, oral history can also serve to build an historical record from the 'top down' by including people working at the 'macro' levels of government and international and multilateral organizations. Somewhere in the middle at the 'meso' level, are figures such as ministry officials and supervisors working in educational districts, and local experts involved in the reform efforts. These multi-level perspectives provide a level of depth and critical understanding missing in formal documents like sector strategies, policy reports, and impact assessments.

While formal documents serve an important function, they obscure the struggles that take place over ideas, policy choices, and economic decisions. Oral historian Patrick Sharma describes gaps and missing knowledge in the formal record as 'information scarcity'. He argues, 'Although written documents can often explain when or how an individual or an institution came to a particular decision, the crucial, behind-the-scenes maneuvering that precedes such choices is usually not written down' (Sharma 2012; see further Chowdhury 2024, Hall et

al. 2021, Herrera and AbdElShafy 2020). Oral histories draw out opaque processes of state planning, policy change, and political decision making. This type of knowledge is essential when trying to understand how a particular policy came into being, and for purposes of assessing whether a policy needs correction, should be reinforced, or might be considered for sunsetting .

In keeping with ethical research practice, all interviews followed standard conventions of informed consent (if a participant was under eighteen years of age, parents also provided their consent). Participants in Part 1 who spoke on the record had the option of reviewing, elaborating on, or withdrawing their edited interview. Several participants sat for follow-up interviews or took part in email exchanges to provide additional information. Excerpts of a select portion of these interviews are available in video form on YouTube as 'Education 2.0 Oral History Highlights' at https://www.youtube.com/@education2-Egypt/videos. They are also listed in the Companion Videos section at the end of relevant chapters. The interviews in Part II are all anonymized. Some of these chapters are based on longitudinal oral historical research that was ongoing for up to two years. All interviews have been edited for flow and clarity. This volume is organized in five sections as follows: the minister and his advisors, international cooperation, curriculum reform and private sector partnerships, digital transformation, and student and teacher voices.

4.1 The Minister and His Advisors (Chapters 2-9)

While serving as the Dean of the School of Sciences and Engineering at the American University in Cairo in 2014, Tarek Shawki was unexpectedly summoned by the President's office to chair the Specialized Presidential Council for Education and Scientific Research[38] (Chapter 2). He applied his engineering skills to study the education system, diagnose its problems,

38 President Abdel Fattah El Sisi issued Decree No. 60/2015 for the purpose of establishing four specialized councils to 'define State policies and prepare comprehensive studies of various national work'. Councils were established for Community Development, Education and Scientific Research, Economic Development, and Foreign Policy and National Security. The council of Education and Scientific Research was specifically tasked with advising on the overall education policy, providing support for technological research institutes, and proposing legislation for the establishment of new research centers (SIS 2015).

and offer solutions. An initial proposition was to create a new education governance model through an authority that could oversee all the parts of the system and ensure high standards of expertise (Chapter 3). He also proselytized for a digital knowledge project that would be available to all Egyptians (Chapter 4). During the inaugural National Youth Conference in Sharm El Sheikh in 2016, as he was waxing poetic on the need for a new education system to be built from the ground up, the President essentially appointed him to be the next Minister of Education and Technical Education on the spot. Shawki recalls the experience of being thrust into the political spotlight for the first time, dealing with a dissatisfied public, and building a pioneering knowledge infrastructure for all Egyptians. He was inspired by Taha Hussein who advocated for universal free education in the mid-twentieth century.[39] Shawki saw himself as also fighting for 'free state-of-the art knowledge for all' through the EKB. He reflects on his legacy, what he might have done differently, and how he was left with scars from battling in the political arena for five years (Chapter 2).

Regardless of its end, the initial years of trying to build a new education system were filled with energy and idealism. Shawki selected a team of advisors, 'the dream team', and told them to start reimagining education from a 'blank page'. After coming up with a blueprint, his advisors Deena Boraie and Nelly El Zayat took the lead in liaising with different international and local partners to develop new curriculum frameworks and books starting with KG and the early primary years (Chapter 5 and Chapter 7). Boraie also worked on recalibrating assessments away from the one-shot high-stake exams. Though they made some inroads, she and the Minister were not able to radially change the Thanaweya Amma system in the ways they envisioned (Chapter 6).

With 'inclusive education' being a core pillar of the new system, the Minister's Advisor for Special Needs Education Ingy Mashhur, led the Ministry's first framework for students with special needs. Despite their best efforts, she raises concerns about the wide gap between legal and policy advances for children with special needs, and realities on

39 Taha Hussein (1889-1973), in addition to being one of the most influential writers and intellectuals of the Arab Renaissance, also served as the Minister of Public Instruction in Egypt from 1950-1952 where he advocated for free universal education. For an outstanding account of his role in educational institution building, see Ahmed 2021.

the ground where things are slow to change (Chapter 8). Meanwhile, the advisor for marketing and communication, Yousra Allam, worked on the ministry's communication strategy to reach different generations and groups. With the Minister as the key messenger, they spread the message of the reforms using print, television, and social media (Chapter 9). These advisors, who also happened to be female, had to balance the demands and unpredictability of government work where they were constantly 'putting out fires', with other full-time jobs, family life, and caring for children.

4.2 International Cooperation (Chapters 10-12)

Sector change in education involves a range of international cooperation. The World Bank provided the initial loan for the Education 2.0 reforms. Juan Manual Moreno and Amira Kazem oversaw the loan negotiations and administration of the loan, respectively. They explain the process involved in working with country-partners and push back against critiques that the Bank comes with an 'agenda' in education. They each recount that despite decades of discussions about changing the Thanaweya Amma exam and system, it has remained remarkably tenacious, making it the 'mother of all reforms' (Chapter 11 and Chapter 12).

UNICEF emerged as a partner early on as the Ministry adopted their Life Skills and Citizenship Education (LSCE) framework. Manar Sharouda, Education Specialist at the UNICEF Cairo office, was involved with the Education 2.0 planning from its inception. Though enthusiastic about the much-needed overhaul of Egypt's education system, she cautions that educational change cannot be pushed only from the top but must be coupled with a bottom-up approach where the school is the unit of reform (Chapter 10).

4.3 Curriculum Reform and Private Sector Partnerships (Chapters 13-17)

The Education 2.0 reforms represent the largest leap in curriculum development for the primary years since the establishment of the Center for Curriculum and Instructional Materials Development Center

(CCIMD) in 1989.[40] Under the direction of Dr. Nawal Shalaby, the Center's staff worked with private publishing companies to develop a new K-12 curriculum framework and ensure that the new books and digital content were up to international standards and adapted to the Egyptian context (Chapter 13). They partnered closely with Discovery Education for textbooks, Teacher's Guides, digital content, and Teacher Professional Development (TPD). Emily Waters, International Senior Project Director at Discovery Education, recounts the process of building teams and developing digital resources and books with Egyptian counterparts (Chapter 14).

National Geographic Learning joined the MOETE a couple of years into the reform to produce books for Grades 4-6 in the traditional subjects English and Social Studies, and to develop new subjects, Career Skills and Information and Communication Technology (ICT). The company brought their trademark high quality visuals to Egyptian textbooks. Tom Kelley, Cultural Expert for National Geographic Learning, reflects on how his team navigated the sensitivities inherent in working on a social studies curriculum, ways they identified source materials, and their productive relationship with their Egyptian counterparts at the CCIMD (Chapter 17).

Nahdet Misr, a leading publisher in Arabic children's books since 1938, worked with Tarek Shawki to deliver Arabic digital content for the EKB. They later developed the 2.0 textbooks for the subjects, Values and Respect for Others, the Arabic language, and religion. It was the first time a 'Muslim' press, was responsible for books for the two religions of Islam and Christianity which follow the same learning framework. A representative of Coptic Pope of Egypt Tawadros II of Alexandria personally oversaw the production of the Christianity books, and the Islam books received the approval from al-Azhar (Chapter 15). The company collaborated with language experts to develop a new methodology for teaching the Arabic language to bridge the gap between classical and colloquial Arabic. As recounted by Nevine El Souefi, CEO of the education consulting company Edupedia, the 'balanced approach' combines a holistic and

40 In 2023, the name of this department changed to the Central Department of Curriculum Development.

phonetic approach and makes reading more intuitive. Their goal was to improve reading levels and encourage children to enjoy reading (Chapter 16).

4.4 Digital Transformation (Chapters 18-23)

Digital transformation represents a cornerstone of the 'new education system'. The most pioneering initiative of this period was the Egyptian Knowledge Bank, the largest knowledge project ever attempted in Egypt. It provides free access to scientific publications for researchers and contributes to the production and dissemination of knowledge in Arabic. The private company LIMS coordinated the various EKB partners. Mahmoud Dawoud and Mahmoud Hussein of LIMS explain the evolution of the platform, how it grew to include K-12, and its positive impact on university rankings and knowledge production in Egypt and the Arab world. It indexed all Arabic language journals, including ones from al-Azhar university (Chapter 19). Mohamed El-Araby describes working with a team of engineers to build the platform from scratch, and recounts how they had to think on their feet during the COVID-19 pandemic when the platform needed to house the Ministry's learning management system for K-12 (Chapter 21). Representing the government sector, Majed M. Al Sadek, Head of the Egyptian National Scientific and Technical Information Network (ENSTINET) and Data Center Administrator at the EKB, oversaw issues related to data security, digital inequality, and financing, all of which required constant solutions. Whatever the challenges, he believes this project has forever changed education in Egypt, with far-reaching implications for not only Egypt, but the entire region (Chapter 20).

Digital transformation of education involves much more than the EKB. Ahmed Daher, Deputy Minister for Education for Information Technology, oversees ambitious state initiatives that are constantly evolving. The integration of ICT in education has generated, by design, demand for new goods and services. The government partnered with Samsung to establish a local factory to produce electronic goods like tablets that are used in schools. Daher has also overseen AI initiatives and in 2025 launched 'Faheem: An Intelligent Framework for Adaptive and Personalized Learning'. Prior to that, he oversaw the establishment

of the state-of-the art MOETE television studio which launched its own channels on YouTube and television (Chapter 18).

Mai Magdy, General Manager for the ministry's two channels Madrasetna 1 and Madrasetna 2, reflects on the responsibilities and rewards of working with public school teachers and producing videos for educational purposes. The videos are aired on local television frequencies and also posted on YouTube where they receive high viewership. She points to the need for more children's educational programming or 'entertaining education' (Chapter 22).

Taking a critical distance from the engineers and managers involved with digital projects, Hany Zayed examines the changing landscape of EdTech in Egypt. He raises pertinent questions about how education digitalization is spurring a private and unregulated EdTech landscape with new players, interests, scope, and rules, and asks what these portend for the future of education (Chapter 23).

4.5 Student and Teacher Voices (Chapters 24-29)

This section highlights the voices of students, teachers, and parents. The research for these chapters draws on longitudinal oral history interviews to gauge changes in attitudes, skills, and learning over time, combined with digital social research on social media platforms and content analysis of press conferences, laws, statistics, and reports.

Students who entered high school in 2018 made up the historic class of 2021. Their cohort was subject to novel experiments, including using government issued tablets, taking electronic exams, participating in hybrid learning and flipped classrooms, and managing their studies during a pandemic. The learning journeys of two students are profiled. Laila, who grew up in a low-income neighborhood on the edge of Cairo and attended government schools (Chapter 24) and Gamal, who lived in a professional middle-class neighborhood and attended a private boys' school (Chapter 26), both talk about how the ups and downs of being part of the experimental class. Despite wide fluctuations in their high school journeys, with all the setbacks and frustrations, they both point to the immense learning and breakthroughs that took place during their high school years.

After schools closed in March 2020 due to the pandemic, the MOETE decided that students in Grades 3-9 should do a research project in lieu of the end-of-year assessments. Chapter 25 considers 'The Rise, Fall, and Aftermath of Take-Home Research Projects'. Rather than judge this experiment in simple terms of 'success' or 'failure', the chapter considers how cultures of learning change, how behaviors that start online get adapted into offline culture, and how social solidarity forms around education problems. It also illustrates the remarkable agility and predatory nature of the informal education marketplace.

Chapter 27, 'Teachers in Search of Their Identity: A View from Ismailia during Times of Change,' profiles four teachers from urban and rural schools and probes how they view their profession. In a reform that sidelines teachers as it privileges technological change, 'teachers are struggling to prove their value and relevance [...] and are facing a challenging future'. Still, teachers find professional satisfaction, especially those working in rural communities.

During the pandemic, teachers' agility and problem solving were on full display. Chapter 29, 'A New Curriculum and a Pandemic: Primary Teachers' Strategies' explores how some teachers saw themselves as active agents of change rather than passive recipients of reforms. Still, they often lacked the kinds of professional support and training needed to ensure their well-being and the learning of their students. Other teachers took training matters into their own hands. Chapter 28, 'Primary School Teachers Leverage Social Media for Professional Development', uncovers how primary school teachers in Egypt have been using social media in innovative ways for informal peer-to-peer teacher professional development. The chapter highlights teachers' skills, communication, and artistic styles with attention to what they identify as their professional gaps and needs.

As this volume documents, there is much to learn from Egypt's historic, audacious, and oftentimes fraught educational experiment. No single reform, no matter how visionary, well intentioned, or far reaching can begin to 'fix' or even scratch the surface of the range of overwhelming and constant challenges in education. Due to a complex set of factors, the reforms were ultimately neither able to deliver on all their promises, nor continue to their logical conclusion, though they invariably drove change and forms of 'transformation', especially in the realm of technology. The

intended and unintended directions of change, to whose benefit, and at what costs, remain open questions that are probed in this volume and will surely occupy researchers for years to come.

Whatever lessons we learn and critiques we raise, education research reminds us that we cannot afford to turn to cynicism, throw up our hands in exasperation and lose hope and direction. The overwhelming fact remains that scores of people go to great lengths and make enormous sacrifices to be educated. Communities fall into the deepest of despair when their education systems and infrastructures are weak, or even worse, when they fall victim to deliberate attacks and destruction. Some of the most egregious examples of schools, teachers, and students being intentionally targeted in ways that deny them education and life can be found in occupied Palestine, which is undergoing unspeakable anguish at the time of writing.[41] In a rapidly changing, oftentimes harsh and unpredictable world, we must continue to learn from the past, evaluate the present systems, and strive for a social contract in education oriented towards human dignity, universal principles of respect for all forms of life, and genuinely sustainable futures, for our collective survival depends on it.

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41 The most extreme and egregious case has been in Gaza, where the Israeli occupying forces have engaged in the systematic destruction of the Palestinian education system through an intentional practice of 'scholasticide'. Coined by Karma Nabulsi in 2009, the term refers to 'the systemic obliteration of education through the arrest, detention or killing of teachers, students and staff, and the destruction of educational infrastructure' (United Nations Human Rights Commission 2024). For more information, see Scholars Against War 2024, Dader et al. 2024.

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