Education 2.0

Chronicles of Technological and Cultural Change in Egypt

Edited by
Linda Herrera

https://www.openbookpublishers.com

Linda Herrera (ed.), *Education 2.0: Chronicles of Technological and Cultural Change in Egypt*. Cambridge, UK: Open Book Publishers, 2025, https://doi.org/10.11647/OBP.0489

ISBN Paperback: 978-1-80511-701-8
ISBN Hardback: 978-1-80511-702-5
ISBN Digital (PDF): 978-1-80511-703-2
ISBN HTML: 978-1-80511-705-6
ISBN Digital ebook (epub): 978-1-80511-704-9

DOI: 10.11647/OBP.0489

Cover image: Ministry of Education and Technical Education, Egypt, CC0
Cover design: Jeevanjot Kaur Nagpal

4. The Road to the Egyptian Knowledge Bank: Interview with Tarek Shawki

Linda Herrera

Abstract

The Egyptian Knowledge Bank (EKB) was launched in 2016 to provide researchers, students, and the general public in Egypt access to state-of-the-art knowledge and learning resources on a digital platform free of charge. Tarek Shawki, Minister of Education and Technical Education from 2017-2022, was a driving force behind the EKB project. He recounts how the seeds of the idea for an open-access knowledge platform began when he was a professor at the University of Illinois at Urbana-Champaign in the 1980s and 1990s, a time that coincided with the birth of the Internet. The idea continued to grow during his years at UNESCO as Chief of the Section for ICTs in Education, Science and Culture, and began taking concrete shape while he was Chair of the Presidential Specialized Council for Education and Scientific Research and then, Minister of Education. The EKB was initially supported by a presidential fund to serve the country's goals of advancing its knowledge economy, but it faced opposition in parliament as being a 'luxury' good. Shawki addresses the future of the EKB, the challenges with funding and sustaining the project, how it has evolved into a publishing platform, and ways it has gained recognition outside of Egypt.

Keywords

birth of Internet, knowledge equity, Marc Andreessen, publishing, rankings, research, Steve Jobs, Stephen Wolfram, UNESCO, University of Illinois at Urbana-Champaign, Egyptian Knowledge Bank (EKB), Scopus, Web of Science

 https://doi.org/10.11647/OBP.0489.04

1. Defining the Egyptian Knowledge Bank (EKB)[1]

LH What is the Egyptian Knowledge Bank (EKB) as a concept and as a digital platform?

TS[2] The Egyptian Knowledge Bank (EKB) is a model of knowledge justice or knowledge equity. The EKB's main philosophy is that it is free for everyone in Egypt. At a time when almost everybody has a way to access the Internet, the EKB is a way to assemble the state of the art of knowledge using advances in technology. Everything on it has gone through a review process. The idea is that anyone with skills and interests should not be stopped from being the next Nobel laureate because of lack of access to knowledge.

We launched the EKB in January, 2016, and since then it has been gradually growing. Six years later, the quality of undergraduate and graduate education has increased. Our rankings of universities have changed tremendously. When I joined the Ministry of Education and Technical Education (2017), I put a lot of K-12 material on it and digitized courses. It remains a work in progress.

2. Teaching at the University of Illinois During the Birth of the Internet

LH Going back to the seeds of the idea for the EKB, in your TedX Cairo talk of 2015,[3] you talk about how you were a young Assistant Professor of Theoretical and Applied Mechanics at the University of Illinois at Urbana-Champaign during the birth the Internet. How did being in that environment influence you?

TS I went to Illinois at the perfect time, between 1986-1999. The birth of the Internet was around 1994/95 when I was there. I saw the 'before technology' and 'after technology', and I jumped on it. I did my Ph.D. at Brown University at the end of the typewriter age. I wrote my

1 This chapter is derived from two interviews conducted by Linda Herrera with Tarek Shawki on 7 September 2022 in Cairo, and on 7 March 2024 via Zoom.

2 Tarek Shawki served as Egypt's Minister of Education and Technical Education from 2017-2022. For a detailed overview of his professional career, see his LinkedIn profile at https://www.linkedin.com/in/tarek-shawki-0059025/?originalSubdomain=eg

3 See the TEDxCairo talk, 'Learning for Life' (Shawki 2015).

dissertation on a typewriter and did all the graphs by hand. And then I arrived to the University of Illinois at Urbana-Champaign where there were all kinds of innovations. During those thirteen years, we had an office for computer services. This was also when email started. At that time, I did not have any friends with an email account, so I used to send emails to myself. When the university first bought the supercomputer, the Cray computer, it was a big deal. We would go and watch that big computer. Actually, any iPhone today is faster than that computer. But at that time, we used to rent time on it to do research, and my research was computational, so I was really into this.

LH Some of the contemporaries you met at Illinois, like Stephen Wolfram, Marc Andreessen, and Steve Jobs, were tech pioneers. What was the nature of the relationship you had with them?

TS Stephen Wolfram and I were hired the same year at the University of Illinois and got to know each other. I was hired as an Assistant Professor, and he was hired as a Full Professor, though he was younger. He was made director of the Center for Complex Systems Research. Everyone on campus was talking about him and saying, 'Who is this twenty-six-year-old kid who walks in the door as a tenured full professor and center director?' He was a geek, a super genius, a physicist who got his Ph.D. from the California Institute of Technology when he was 20 or 21 years old. Not surprisingly, Steve Jobs was his friend and would come to Illinois to visit him. I used to hang out with those people. They were actually forming their creative ideas at that time.

After Steve Jobs was kicked out of Apple in 1985, he told Stephen (Wolfram), 'I am making a new computer called the NeXT Computer'. This was a black machine, a unique looking thing that was a hit at the time and only sold in universities. In 1993/94, I bought one hundred of those computers from funding I had from a National Science Foundation grant. I made a lab across two rooms. I used to spend all night learning Unix to be able to fix them. There was no system administrator. I fixed the computers and made accounts for my students and taught them how to use them.

After a year of being employed as a full professor, Stephen Wolfram wrote to the president of the university, like a two-line message that read, 'I hereby submit my resignation because I am bored' (laughs). He is that

kind of a geek. He went on to make his company 'Wolfram' in Champaign (Illinois). His first product was called 'Mathematica'. He showed it to me because we were always talking about these things. He told me, 'You know, I can make the computer do symbolic math'. I said, 'We cannot do that. Computers do numerical math'. I was thinking about calculators which have numbers. But he wanted a computer to solve equations that are symbolic, like when you write AX+ B=0. How could the computer understand that? But he managed to do it. He had the first software that does symbolic math. I was fascinated. He gave me the floppies of version one. I put Mathematica on the NeXT computers in my lab.

LH You were at the University of Illinois during the creation of the first popular web browser Mosaic, developed at the National Center for Supercomputing Applications (NCSA). Were you aware of this at the time?

TS Yes. In 1993, the Internet as we know it with the HTTP protocol, was born at the University of Illinois by a team led by Marc Andreessen.[4] Marc was our student at the College of Engineering. I used to hang out with him and that group of tech geeks. Marc tried to explain the HTTP protocol to me, and I could not figure it out. He said, 'You can have this page on your computer, and I can see it on my computer'. That seemed like magic. He showed it to me and I said, 'What? I can make my courses like that?' I thought it would be cool to try to do my courses online.

LH What made you want to experiment with teaching your courses online?

TS In 1994, I was already a tenured Associate Professor, so I was free to do my hobbies and experiment with things. I learned to write code in HTML which was very difficult. I then started to prepare my own content. By 1995, I had a whole website called 'Mechanics on the Internet' which was very unique. It had six courses, including Material Science, Fracture Mechanics, Elasticity, and others. I taught the students step by step how to participate in the class, see the solutions to their homework, access their

4 Mosaic was released in 1993. In 1995, Microsoft licensed Mosaic to create Internet Explorer. Andreessen left UIUC with a group of colleagues to start the Netscape Communications Corporation in Silicon Valley which produced the Netscape browser. In his book *The Founders: The Story of Paypal and the Entrepreneurs Who Shaped Silicon Valley*, Jimmy Soni describes the environment of innovation at the University of Illinois in the 1990s (2022).

grades, all these things. At that time, no one was doing this. My colleagues thought I was crazy. I was doing this with my students in Illinois.

I took this even further in 1996, during a sabbatical in Egypt. My department chair contacted me to ask if I could teach a graduate course. He said, 'I know you are on sabbatical, but there is a graduate course you teach every other year and it has to be taught this year or else this cohort will miss it'. I asked how I was supposed to do that since I was in Egypt. He said, 'Oh, we can use the Internet.' I said, 'Are you kidding? It is impossible. We have dial-up in Egypt'. But I did it. I taught that course in Fracture Mechanics to students in Illinois using dial-up from Cairo. I had them do the homework and send them to a computer in Talbot Lab (in Illinois), and I graded them from Egypt. Teaching has always taught me a lot.

LH How did your experiments with teaching online inform your ideas about education?

TS After I learned how to use technology in the classroom, I wanted to learn from everywhere with no barriers. I saw that with the new technologies, this was possible. In 1996, I came up with an idea called the 'Global Campus'. The way I saw it, the new technologies could allow students to attend courses in different universities. I was thinking, 'What if all the great professors put their courses in one place that we call the Global Campus?' For instance, if someone wanted to attend à la carte courses at Brown, Harvard, and Caltech, digital technologies allowed the possibility to do that. The problem was about the degree; who would give the degree? I wrote big proposals to get funding for the Global Campus, and we got the funds. We could not carry the idea through to the end unfortunately, because these campuses went to other platforms. But the idea was there very early in 1996.

I become famous in the Midwest for being an early innovator of online classes. I went on a Midwest tour to different universities to teach them how to do their courses online. That is what caught the attention of UNESCO. They offered me a position in their Communication Information (CI) sector. When I left Illinois to start my United Nations phase in 1999, I had two fully functioning labs with over one hundred NeXT computers and servers at Illinois. I tried all the new technologies.

3. Seeds of the Idea for a Knowledge Bank

LH When did you start forming ideas for something resembling a knowledge bank?

TS Ever since meeting Steve Jobs at Illinois, I had kept in touch with the Apple folks. I talked with them all the time. One of those conversations was with John Couch, the Vice President for Education at Apple.[5] This conversation was in 2007 after the first iPhone was launched, and a year after I had the idea for the Global University.[6] I met him in Cupertino and we also met in Munich. I remember telling him, 'John, we must be able to do something now that you have this amazing device. Can you do an iPhone that is much bigger? Like the size of a DVD box?' The DVD was the reference then. It was the idea of the tablet. He asked why and I said, 'Because we can put courses on these devices. Imagine, courses would be directly in the hands of people. You mix the Internet with courses'. We sat for like three hours. That was the birth of the idea of the iTunes U which he really carried out.[7] They later made the iPad. I used to talk to him and his team about the courses. They took my advice in Arabizing the interface and sent me the fonts. I later joked with him, 'You have to give me some IP rights or something for iTunes'. John Couch is still there and I visited him and Jonathan Ive (Chief Design Officer of Apple, Inc from 1997-2019) in Cupertino. In UNESCO, I suggested something like

5 John Couch, a graduate of UC Berkeley, was the first Vice-President of Education at Apple. He is also author of the book, *Rewiring Education: How Technology Can Unlock Every Student's Potential* (with Jason Towne) (Dallas, TX: BenBella Books, 2018).

6 The first generation iPhone hit the US market on 29 June 2007.

7 As reported on TechTarget, 'iTunes U is a dedicated section of Apple's iTunes Music Store that features educational audio and video files from universities, museums and public media organizations for free download to PCs and mobile devices. iTunes U allows a visitor to search, download and play educational content in the same way that they can manipulate songs, podcasts, television shows and movies. Participating institutions include Stanford, UC Berkeley, University of Melbourne, Texas A&M, MIT, Yale, Trinity College Dublin and many more. The Beyond Campus section of iTunes U also delivers programming from American Public Media, PBS, the Museum of Modern Art and the Smithsonian' (https://www.techtarget.com/whatis/definition/iTunes-U). Apple discontinued the iTunes U service and its app at the end of 2021, though some of its contents can still be accessed on Apple Podcasts.

a global library of courses. And then, Apple was faster to do the iTunes U. So these were attempts. These were all precursors to the EKB.

LH You became director of UNESCO's Regional Bureau for Science in Arab States where you served in the 'Information Society Division' as the Chief of the Section for 'ICTs in Education, Science and Culture'. How did this work differ from your work in academia?

TS Going to UNESCO marked a big shift from academia. A big part of my decision was because my father was diagnosed with Parkinson's disease and I wanted to be back in Egypt, but I did not know how to do that. I did not apply for the UNESCO job, an old friend of mine recommended me. So, I felt like God wanted me to go back when I was offered this position in the UNESCO Cairo office. Working thirteen years at UNESCO gave me a different exposure. I saw hundreds of countries struggle with education, technology, and digital content. They talked a lot, but did very little in terms of solutions. As an engineer, I cannot sit patiently listening to problems without thinking of solutions.

LH You had been thinking for a long time about how to make knowledge open and accessible to the public. How did these ideas culminate into what would become the Egyptian Knowledge Bank?

TS After finishing at UNESCO, I went to the American University in Cairo in 2012. When the President started his first term in 2014, my public service started. He wanted an advisory group in education and scientific research. I do not know how, but he picked me and some other colleagues to be in that body (see Chapter 2 in this volume). The President had ambitions to turn Egypt into a world-class country, whether in education, science, or infrastructure. Of course, he had his hands full with economic challenges, security, and other things, but he was talking about grand visions. The President is a doer and a dreamer which fits perfectly with my chemistry.

When we were discussing how to improve education and scientific research, I brought up Taha Hussein and his generation. They were products of a scheme started by Muhammad Ali Pasha who built modern Egypt (1805-1848). He sent talented young people to France, Italy, England, and Austria to learn and return to Egypt. Some of our

most famous novelists and scholars were the products of those trips. They had a great influence on the culture, mindset, and intellectual life in Egypt. So, when the President mentioned that he wanted to bring Egypt to a new era of enlightenment, I was prepared to discuss how to do that. I mean, I had thought a lot about these ideas.

I said, 'Sir, with today's technology, we do not have to send people abroad. Publishers around the world are providing digital content. Human knowledge is all out there, in economics and arts, in medicine and engineering, in education, everything. We can grab it, assemble it, and make it available here'. I talked about how Taha Hussein preached about knowledge equity, about education for all children without discrimination (see Fig. 4.1). We could make that a reality by making all the knowledge available to every citizen, poor and rich, through a digital platform. Digitization is not a luxury anymore for this generation. They cannot imagine the world without technology. So, that was the birth of the idea.

Fig. 4.1 Taha Hussein (left), Minister of Public Instruction in Egypt from 1950-1952, receiving the National Honors Prize in Literature from President Gamal Abdel Nasser 1959, Cairo. Wikimedia Commons, public domain, https://commons.wikimedia.org/wiki/File:Nasser_and_Taha_Hussein,_Nov_19_1959.JPG#/media/File:Nasser_and_Taha_Hussein,_Nov_19_1959.JPG

LH Had you rehearsed your pitch about the EKB to the President prior to that meeting?

TS My response was not rehearsed at all. The President used to ask a lot of questions to the advisory group. He would say, 'Give me ideas, I need more ideas'. And we used to offer him a range of ideas. He stopped at this one about a knowledge bank. This idea he liked. And he asked a lot of questions—about scientific journals, the review process, the impact factor. I talked to him about Springer Nature, Elsevier, and Wiley which could be boring, but he listened carefully. He asked how this could benefit education and research in Egypt, what it would entail, how we could do this? I remember he spent five hours on this. Imagine, a president sparing five hours to listen to ramblings about something we later decided to call the Egyptian Knowledge Bank. We thought about what to call it. It is not a library. It is more than that. And it has actually grown beyond that. But he listened. When he really grasped the idea he said, 'You know what, this is a big hit. Go for it'.

LH How did the idea for a Knowledge Bank turn into a tangible project? What were the steps to get the publishers on-board?

TS The President allowed me to go and negotiate with the publishers. He asked me to come back to him with a more polished idea and with details about the costs. This was before I became a minister. I did this on a voluntary basis as a private citizen. When I traveled for the university or for something else, I would spend an extra day to meet publishers. I visited Elsevier, Springer, Wiley, and many others. I had to convince them to join this project.

The way publishers normally operate is they come to a university and sell a subscription. The first question they ask is about the number of users. The price is a function of the number per head based on the number of students. I was asking them to give me a flat license for one hundred million users, and that was not easy. But we managed at the end to find the business model to do that. And once the top guys accepted, the rest followed.[8] I collected twenty-six MoUs and showed the President (see Fig. 4.2).

8 One of the challenges that emerged with discussions with publishers was how to guarantee archival rights to a publisher's materials even if a publisher might be sold or face bankruptcy. As explained in the UNESCO report on the EKB, a number of publishers worked together with a proactive solution. 'Collaborately, they established a system for digital preservation, safeguarding scientific materials

Fig. 4.2 Dr. Tarek Shawki (right) signs publishing agreement with Dr Olaf Ernst, IOP Publishing's Commercial Director, 2018, Wikimedia Commons, CC BY-SA 4.0, https://commons.wikimedia.org/wiki/File:Tarek_Shawki_Signs_EKB_Publishing_Agreement.png#/media/File:Tarek_Shawki_Signs_EKB_Publishing_Agreement.png

I asked the President to invite the CEOs of those companies for a meeting so they would understand the seriousness of this. He invited twenty-six CEOs to the presidential palace and sat with them around a big circular table for over an hour and a half. We talked about costs and contracts. He said, 'Okay, we will do it'. That was November 2015, when he had his hands full with economic problems, security struggles, you name it. He put a value on knowledge. He might have told me it was not the right time for this, to wait a few more years, but he did not. We signed contracts. The EKB is essentially a presidential project. The ministry is a user of it.

for perpetual access. This innovative initiative laid the foundation for securing Egypt's uninterrupted access to crucial data, irrespective of external disruptions' (El Souefi 2024).

LH The EKB is supported by the office of the Presidency of Egypt, but is there wider political support for it? How has it been received politically, in the parliament and other government circles?

TS I can answer this with a story. Shortly after meeting the publishers, the President traveled to France. I received a call to attend a meeting of the Cabinet of Ministers. I was not a minister at that time and I had no idea what the meeting was about. I showed up and found about thirty parliamentarians, most of them hostile. That is when I became aware of the political trouble I would face in decision-making circles. The Prime Minister turned to me and asked, 'Tell us more about this thing called the Egyptian Knowledge Bank'. I was very surprised. This was something done by the President. I came empty-handed. I could have prepared a presentation. I briefly explained the project. He then asked his colleagues if they had any comments or questions for me. Each person in that room, with only two exceptions, proceeded to say the nastiest possible things about the EKB idea. I was watching them as if I was in the theatre. I had no idea what this was really about.

One comment that especially stood out was a parliamentarian who remarked sarcastically, 'Thank you very much for the caviar and cashews you bought when we do not have sewage in the villages'. Then the Minister of Justice looked at me and said in a tough tone, 'Congratulations, you just got yourself 600 years in jail because all these direct order contracts you made (with the publishers) are illegal'. I did not know what came over me but I replied, 'Sir, if I am a good boy, can I get out of prison on good behavior after 300 years?' He said, 'Are you joking with me?' I said, 'No, you just said I would get 600 years for illegal contracts. Let me remind you that I do not hold any office and I do not have the authority to sign contracts or spend government funds. So why are you talking to me? You should be asking the President'.

These kinds of statements went on for an hour and a half. When they finished, the Prime Minister looked at me and asked, 'Do you want to say anything?' I had a lot to say and they could not stop me. I said,

> When you compare knowledge and enlightenment to sewage, this tells us why Egypt is at the tail of nations. If we do not have a knowledge revolution, then we will remain this way for a very long time.

I went on about how building human minds is as important as building roads and infrastructure. It is not either/or, we should do both. Once we give people access to knowledge they will be able to build the roads and fix the sewage. Then the Minister of Culture jumped up and said to the Prime Minister, 'Sir, Egypt is not in need of a knowledge revolution.' I answered, 'Really? This is what the Minister of Culture thinks? Can you say that publicly? You must be kidding me'. He also said that people in villages were too simple to be able to access this EKB. I told him, 'A reason we are putting the EKB together is to give those people the justice they are deprived of'.

I am sure they were annoyed with me and wondered, 'Who is this guy who has the nerve to talk to us like that? He must be protected by the President'. It later turned out that a reason they wanted to discredit the EKB was because they had spent the funds allocated to it on other things. When the President found out, he forced the Prime Minister to pay the money for the EKB. But I think there were other issues at play. First, they were not imagining what the EKB was. They thought it was just a bunch of direct subscriptions, but it was more than that. Second, they did not see or imagine how it would impact K-12 education and higher education and research. At the time, it was couched as a battle for resources, which was understandable. If you are a minister of transportation, you want roads. If you are a minister of supplies, you want more money for wheat and rice. The President saw the value of investing in this and from 2016 until now (2022), he paid the bill to make it available and free to all citizens.[9] I think this is one of the most respectable projects from a political leadership point of view. I give the President a lot of credit. He understood this and he agreed to this project.

4. Knowledge Equity and Education

LH How has the EKB evolved since its launch in 2016?

9 In 2023, the Egyptian Knowledge Bank moved from being a Presidential Project, to being under the auspices of the Ministry of Higher Education and Scientific Research, which meant its funding was no longer secured by the office of the President.

TS Part of the original idea was to help post-graduate students and researchers in Egypt. The EKB contains reviewed, curated material. This is important. It is not like Coursera. People in universities used to suffer a lot to access a single published paper. If you wanted to download a paper without a subscription, you would have to pay thirty dollars per article—not per journal, per article. In the last six years (2016-2022), Egyptians downloaded half a billion articles through the EKB, freely, without paying. If you multiply half a billion by thirty dollars, you can see the actual price of this content that was made available freely to the people. But the EKB was never just a subscription service. It kept growing and changing.

It has become a publishing house. We published 700 Egyptian journals last year. Many are being recognized in Scopus and the Web of Science, and made it into the international rankings. The rankings of Egyptian universities have consequently improved tremendously over the past five years. The EKB platform also provides training for university faculty in all fields; in pharmacy, biology, chemistry, literature, you name it, including things like how to write papers. I worked with the Ministry of Health to do the Board Exam for doctors. Now we added solutions like exam platforms and banks of questions for doctors. We have a Learning Management System (LMS) with courses in anatomy. We have seen a lot of advances since the start of the EKB. The concept of the Knowledge Bank grew a lot, especially after I became Minister.

LH When you became Minister of Education, how did you adapt the EKB to serve students in K-12?

TS I thought that if we really wanted to provide something for all one hundred million citizens, we should not focus just on scientific journals, but on the general reading public, people of all ages, men and women, young and old. We got Britannica, Discovery, National Geographic Magazines, things in Arabic, and others. It is a dynamic work that keeps growing in terms of acquisitions (see Fig. 4.3). When I went to the Ministry of Education, I thought I could use this as a platform and have digital material customized to the curricula. We knew students were online, but they were not looking at the EKB. I guess they were busy with Instagram, Twitter, and other social media.

So, my idea was to link the EKB to school materials so that students would have to go there.

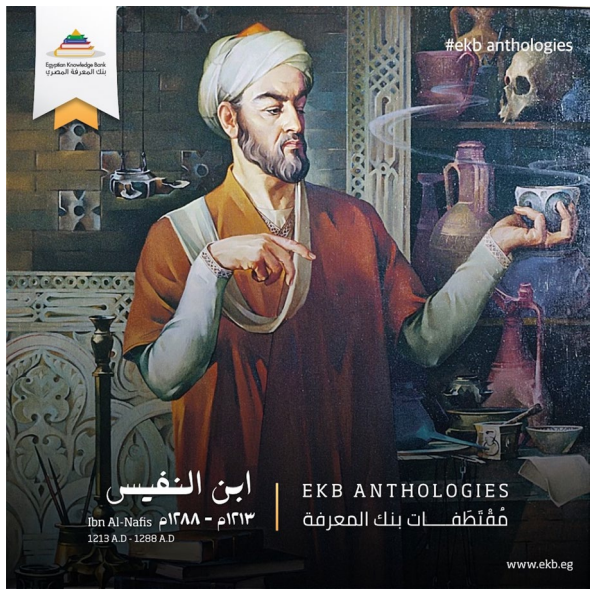

Fig. 4.3 Ibn Al-Nafis (1213-1288) featured on the Egyptian Knowledge Bank, 2018, Wikimedia Commons, CC BY-SA 4.0, https://commons.wikimedia.org/wiki/File:Ibn_al-Nafis_on_the_Egypitan_Knowledge_Bank.jpg

LH From 2018, all students entering high school (Grade 10) were given government issued Samsung tablets. Did you intend for them to use them to access the EKB?

TS Yes, the main reason we gave high-schoolers tablets was so that they could access materials on the EKB. They could not say they did not have Internet or a computer. Everyone had the same tool to get there. Once we got them to the EKB, we thought maybe 20% would get hooked. A good student would discover an ocean of knowledge there, and learn how to research. And it worked! The numbers increased exponentially. In fact, today in 2022, we have statistics that show that the highest rates of EKB access are from students in the K-12 system. You know, we have farmers with their iPads sitting barefooted in a field, having access to this great material. And that is beautiful. Those are the ones who appreciate this service more than anybody. That pleases me

tremendously. So if anybody is interested in learning, at least those tools make it much easier.

LH In 2019 when schools closed due to the COVID-19 pandemic, Egypt seemed relatively well prepared to transition to online schooling. How did you leverage the EKB for online and hybrid learning?

TS Well actually, COVID-19 helped us a lot because people accepted things they would not have accepted in normal situations. We put a Learning Management System (LMS) on the EKB, and that saved us during the pandemic. That was actually a blessing, I mean in a way. Not for kids in the primary years (Grades 1-6) because the younger ones really need school and those kids lost a lot, for sure. Younger children should spend more time in school, be with friends, learn ethics and values, build their character. It is not just about knowledge. But as they grow, they can depend on online stuff more. I am talking about older kids in Grade 7 and above. They learned new ways and got used to looking at digital platforms, so that was a big improvement. Today (2022), the LMS that we used for K-12 education has been given to higher education in twenty-seven universities. Over 542 colleges with different disciplines are now building courses to populate the LMS in medicine, engineering, and many other subjects. This is lovely, this is the dream.

5. The Future of the EKB

LH Is the EKB a sustainable project in terms of its business model? Is it considered a purely public funded project, or do you see it becoming privatized down the road?

TS That is a good question. Today (September 2022), it is still covered by the government. But at some point, it will need to be self-sustaining. Four years after we started this, the President asked, 'Do you think we can sustain this if we keep paying for it. I think you will have this battle looking for resources every single year'. It is true that at the beginning of every fiscal year we had the same conversation. He said we have to find ways to generate money to at least make it self-sufficient. It is not easy because it was built as a service to people. We cannot ask people to pay for it. I do not want it to be a service only for those who can pay. This is a dilemma.

We gained a lot of know-how while we were building this project. It became a consultancy service to other branches of government. For example, the Minister of Health got inspired by the LMS we did in the Ministry of Education. He asked if they could have the same Learning Management System to train doctors for the Board exam. When they saw us do electronic exams, they said, 'We have to do this for doctors'. So, we made a complete solution of the LMS, the software itself, populated it with digital content for doctors, added the exam platform, and then the Egyptian board. The exam for doctors is completely the product of the EKB team. Today, about ten or twelve Ministries are receiving services. These range from our Egyptian Central Bank, to the Ministry of Interior, to the military. The Egyptian genome project is hosted on it, as is the open access project. What happens is that the EKB sells those services to government branches for a ten percent margin. We use it to support the subscriptions to take the burden off. We are still not breaking even, of course, because it is not a business. Some ten or twelve ministries in Egypt are now partners in the EKB, including the Ministries of Justice and Environment.

LH The concept of the EKB is to make knowledge resources free for the public. So far, it has been limited to Egypt. Are there plans to make it available to other countries?

TS I think the project will be more sustainable if adopted by other countries, if it goes beyond the national borders. I think it is ready to do that in the near future. The interest is all over, but we do not have a mechanism to do this. A big part has to do with the publishers. They worry about their markets in other countries. They are business people and what they care about at the end of the day is how much they are making. There is also a political component. For instance, the Saudis want to merge their digital library with the EKB. But all these discussions get locked by political barriers. It is very hard for a minister of another country to say I am paying the government of Egypt to access the EKB. No way. It is easier for a country to join a UN agency than to get engaged in a government to government contract, which is near impossible because of political sensitivity around payments. But if UNESCO was the hub, they could subscribe to it. A minister in Kenya, or Saudi Arabia, or Sharjah, could sign a contract and make a payment to a UN agency. I am talking to UNESCO about making the EKB a global platform. The main work would be to have a mechanism for the money

and the copyrights. Once a county is subscribed, they will start asking for more material to be added and that will keep it growing. All this investment would be shared between different countries.[10]

The EKB future is really what we are working on. It will open doors for other collaborations. We can prepare the digital content being used by students in other countries for core subjects like science, math, and languages. Imagine, we could have professors from different universities, in many languages, use this platform. Imagine that grows to a multilingual incredible thing. So, if I am a student in medicine, I have my pick. I can look at any course I like. And they would all be free.

LH Do you think this initiative has been well understood and appreciated?

TS The irony is that this project is well respected in many circles outside of Egypt, but the people we made it for, they are throwing stones at us. People here say, 'Why are you putting money into this? Why do we need that? Why do you not print books like the old days?' I try to tell them, 'I am getting you stuff from Britannica and other top education publishers. We are adding fifty to sixty digital objects to the lessons that were in your old printed book'. Their response is, 'No I want the printed book. I want to stay in the ghettos. Do not put me in the World Trade Center'.

The EKB is much more appreciated outside Egypt. I had dinner with colleagues at the International Finance Facility for Education (https://iff-education.org/). They have ten billion dollars to give as education grants. Stefania Giannini, the Assistant Director-General for Education said they were going to present the EKB as the flagship education project. Then Jaime Saavedra (Global Director, Education, World Bank) and UNICEF said that they would present Education 2.0 as the exemplary modern system to follow. UNESCO has made a decision to put forward a resolution in the executive board in front of the Secretary General in New York and like fifty heads of state to make the Egyptian Knowledge Bank a flagship project for other nations to follow.

I am really convinced that investing in learning and knowledge will have a positive impact on everything else. The President is interested in infrastructure development like roads and bridges and building new

10 Public usage of the EKB has remained steady with about roughly 4.5 million people registered on the platform in 2024, with the highest user rate among those aged fifteen to twenty-two. However, with a population of 114 million (2014) there is much room for growth (El Souefi 2024).

cities. Whether people agree or disagree with these priorities, my claim is that you can build the best highways, but whether people drive on them correctly is a different story. Because when somebody drives in the opposite direction, or disregards the lanes, it will cause accidents and ruin those structures. If you do not invest in education, the same culture will destroy all of that. When I was young, I was influenced by Taha Hussein and others. But along the way, maybe I went to places at the right time, I was influenced by the emerging technologies. Taha Hussein wanted knowledge to be free with no boundaries. That is what we have been doing with the EKB. This has always been my dream.

6. Bibliography

Couch, John, with Jason Towne. 2018. *Rewiring Education: How Technology Can Unlock Every Student's Potential* (Dallas, TX: BenBella Books).

El Souefi, Nevine. 2024. 'The Egyptian Knowledge Bank: A Case Study of Egypt's National Digital Learning Platform', *United National Educational, Scientific and Cultural Organization* (*UNESCO*), https://unesdoc.unesco.org/ark:/48223/pf0000391125

Shawki, Tarek. 2015. 'Learning for Life', 1 October, *TEDxCairo*, YouTube, https://www.youtube.com/watch?v=JL0VrLGsU1E

Soni, Jimmy. 2022. *The Founders: The Story of Paypal and the Entrepreneurs Who Shaped Silicon Valley* (New York: Simon & Schuster).

7. Companion Videos

Video 4.1 Tarek Shawki: 'Road to the Egyptian Knowledge Bank (EKB)', Interview by Linda Herrera, Education 2.0 Research and Documentation Project, 6 August 2023, YouTube, https://www.youtube.com/watch?v=t7FRYOZaOaU

Video 4.2 Tarek Shawki: 'Being at the University of Illinois during the Birth of the Internet', Interview by Linda Herrera, Education 2.0 Research and Documentation Project, 4 August 2023, YouTube, https://www.youtube.com/watch?v=QmCRIsRZYoU

Video 4.3 Tarek Shawki: 'Learning for Life', TEDxCairo, 1 October 2015, YouTube, https://www.youtube.com/watch?v=JL0VrLGsU1E