

# EDUCATION 2.0

## CHRONICLES OF TECHNOLOGICAL AND CULTURAL CHANGE IN EGYPT

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# 19. Coordinating the State's Knowledge Project: Interview with Mahmoud Dawoud and Mahmoud Hussein

*Linda Herrera*<sup>1</sup>

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## Abstract

The Egyptian Knowledge Bank was established in 2016 as the largest knowledge platform in Egypt. It contains portals for the general public, K-12 learners and teachers, and researchers. The government commissioned the private company LIMS to handle its coordination and technical support. Mahmoud Dawoud, Marketing and Training Director, and Mahmoud Hussein, the Managing Director, explain how the platform has evolved over the years. They detail their initiative to index all Arabic language journals including ones from al-Azhar university, and the subsequent increase in university rankings. The challenge of a knowledge project is that it requires constant updating of materials and regular outreach to the public so that more users, and by association the society, can reap its benefits.

## Keywords

Arabic journals, indexing, learning outcomes, higher education, ranking, scientific research, training

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1 This interview took place on 1 March 2020 in Cairo. Special thanks to members of the Education 2.0 Research and Documentation Project team Abdelhamid Mahmoud, Nairy AbdElShafy, Ahmed Alaa, and Mostafa Hanafy for their contributions to the questions, background research, and filming of this interview, and to Heba Shama and Hany Zayed for transcribing and translating the interview which was conducted in Arabic. Highlights of this interview are available on the Education 2.0 YouTube Channel at <https://www.youtube.com/@education2-Egypt/videos>

## 1. The Origin Story

*LH* Let us start with a very simple question. What is the EKB?

*MD*<sup>2</sup> Simply put, the EKB is one of the biggest knowledge projects in Egypt. The EKB is much larger than a digital library because it provides many services, has a vision to support education, scientific research, and the spread of sciences throughout Egypt. The EKB has one website, [www.ekb.eg](http://www.ekb.eg), with four sub-portals that users can register for and use: the first is for general readers; the second serves the academic and research sector within Egypt; the third is for K-12 students; and the fourth has general materials for children aged 6-12. We need our society to return to loving culture and reading. The truth is, we have been missing those things on television. The Egyptian Knowledge Bank lets people access knowledge about things they are excited about and pursue their passion (see Fig. 19.1).

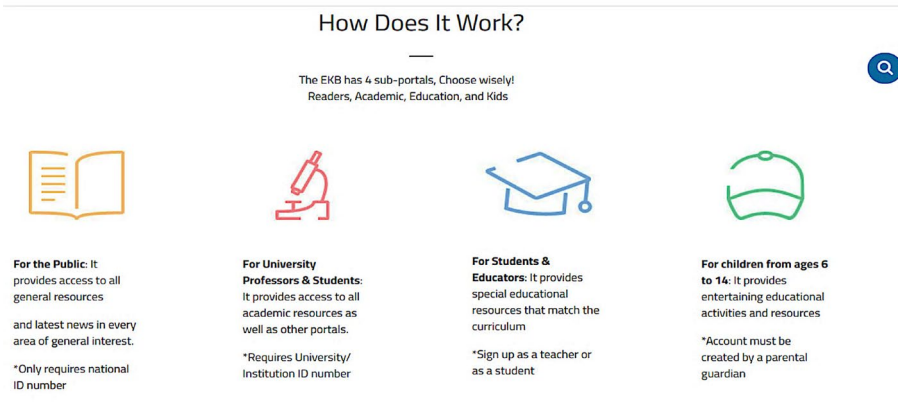


Fig. 19.1 The four portals of the Egyptian Knowledge Bank.

*LH* Can you take us through the journey of how the EKB came into existence.

*MD* It formally started in January 2016, under the auspices and vision of President Abdel Fattah El-Sisi. The idea goes back to Science Day on 13 December 2014, at an event called 'Towards an Egyptian Society that

<sup>2</sup> Mahmoud Dawoud (MD), Marketing and Training Director at LIMS Egypt.

Learns, Thinks and Innovates'.<sup>3</sup> This was the start of three projects: an ICT Competency Framework for Teachers; establishing a presidential leadership program for youth; and having some kind of Knowledge Bank.<sup>4</sup> The Knowledge Bank was needed because for the past thirty years, electronic resources were only available through Egyptian universities or large public libraries. They were mainly for researchers and a small number of general readers. Scientific articles were behind paywalls and people could not afford them. Around five years ago, we started seeing problems with how academics and other learners were selecting electronic sources and science materials.

MH<sup>5</sup> The project was a way to automate the work coming from faculties of science in national Egyptian Universities. In 2015, we met Dr. Hoda Abu-Shady, Professor of Nuclear Physics at Cairo University at an event at the Greek Campus of The American University in Cairo (AUC). Her idea was to bring together all university science departments under a single portal and start digitizing their research and scientific output. His excellency Dr. Tarek Shawki, then Chair of the Specialized Presidential Council for Education and Scientific Research, added that we should do it as a complete bouquet of publishers in different fields. This would enrich research in different specializations in Egyptian Universities and give researchers a chance to have access to quality research instead of depending on the Internet.

MD We found that Dr. Tarek Shawki had a bigger vision. He said we needed to do something that would support not only higher education, but also basic education for any Egyptian child who is passionate about science and knowledge. We needed credible sources, not the kinds of unreliable things you find on social media. We know that children are watching more YouTube at home and playing games on smart devices. We thought we could offer educational applications and games with much loved children's

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3 'Towards an Egyptian Society that Learns, Thinks and Innovates' is the branding for an initiative that came out of President Abdel Fattah Sisi's office in 2014. It has been consistently used as the branding for the different state-led knowledge projects. In 2019 for example, the Ministries of Education and Higher Education held an Egyptian Knowledge Bank event to commemorate four years of strategic partnerships (see PR Newswire 2019).

4 See 'What is the EKB' from the EKB workshop (EKB 2017).

5 Mahmoud Hussein (MH) Managing Director, LIMS Egypt.

stories in Arabic and English that foster moral values. We have developed good relationships with many publishing houses over the past twenty-five years. They came and met Dr. Tarek Shawki and Dr. Hoda Abu-Shady and nine other people, all professors, from different specialties around the country. They started getting price quotations according to the type of content, whether on a perpetual basis that you pay for just once, or content on a subscription basis which gets renewed every year. The government needed someone to help guide the process, and they chose us.

*LH How did your company LIMS get selected to oversee the Knowledge Bank, a governmental project?*

*MH* Our company (LIMS), which started operations on 1 January 1995, was originally specialized in online access, something that was not in vogue at the time.<sup>6</sup> We took a big responsibility upon ourselves. At that time, a CD-ROM could hold around 200,000-300,000 pages and was operating on a stand-alone system. This changed to a client server architecture, and then online. When the government issued the call for a company to work on the EKB, it received many direct bids, local and international. The only bid they were comfortable with was ours because we did not put prices. Our offer was purely technical and statistical. They said, 'Come and help us, and if you succeed, we will make you the main deputies as technical specialists'. And thank God, we started working on this in June 2015. We said we wanted to take this on to help to spread knowledge, not to gain profit. We made a commitment to be the middlemen and needed to be honest in those deals. Thank God, they have been renewing us automatically for five years now. This has given us experience. My partner Mr. Mahmoud Dawoud and I have been travelling, and things are going well.

We started building a very big team because the state thinks big. They do not have staff for the EKB, or a dedicated budget to pay employees. They work horizontally, meaning that each publisher is responsible

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6 The mission of LIMS, according to its website, 'is to empower the global research community by pioneering the creation of cutting-edge digital libraries, fostering a seamless integration of technology to enhance the accessibility and impact of scholarly publications. We are dedicated to revolutionizing the way knowledge is shared, ensuring that researchers, academics, and institutions worldwide can effortlessly navigate the digital landscape for the advancement of human understanding' (<https://limsegypt.com/about/#vision>).

for the content, the training. We handle the coordination and technical support for the EKB. Even the data center comes from the Egyptian National Scientific and Technical Information Network in the Egyptian Academy of Scientific Research and Technology (ASRT). They donated the data center because it is a public sector entity which oversees the infrastructure. These were the best people to take care of and nurture the data center. They paid millions of pounds for communication equipment and infrastructure, in addition to the solutions that we used (see Chapter 20 and Chapter 21 in this volume).

MD The participation of the private sector can serve the state to a big extent. The private sector can help governmental projects to succeed.

*LH How do you create a secure system that anonymizes users and protects national data?*

MH Security was a big issue from the start. The Academy (ASRT) did not want publishers to know the scientific research direction of users in Egypt. This was an opportunity for us to secure the national system. Content suppliers from Elsevier, Springer Nature, or other big companies normally track the direction of scientific research. For example, if I access four articles in physics or chemistry from a journal, this is known to the publisher. But in our system, the publisher does not have the capability to know the name of the researcher and can only see a token number and typology. When I sign on to a system like Google, the search can be exclusive to Egypt, or geofenced. A publisher can see only a token number but does not know the name or the academic department or the researcher (see Chapter 20 in this volume).

## 2. The EKB in K-12 Education

*LH Tarek Shawki has said that the EKB is not just a digital library, it is an ecosystem. Can you explain to us how the EKB made this transition from being a digital library to an ecosystem?*

MD What is happening in Egypt is not an education reform, it is a transformation to a new educational system. As of now (2019) this new educational system, 'Education 2.0' has been applied in KG1, KG2, and Grades 1 and 2. At the same time, there is also a reform of the old system,

and this is particular to high school where all students entering Grade 10 receive a tablet. EKB partners provide a huge number of international resources for K-12 based on international criteria and standards. They are helping the Ministry prepare the general framework for the new curricula. Those companies or publishers such as Encyclopedia Britannica and Discovery Education, write up learning objectives based on the learning outcomes set by the MOETE, all according to international standards. This will lead us to reaching a good international ranking for Egyptian public education.

MH Each publisher signed a protocol with the MOETE which includes details about the learning objectives. Publishers provide digital content to meet learning objectives for each subject—the sciences, mathematics, biology, chemistry, physics, and the social sciences. We have something technical called ‘sandboxes’. Every publisher has content in a unique sandbox. Discovery, Britannica, Pearson, York Press, Nahdet Misr, Wolfram and others have their own dedicated sandbox. When the student does a search, the system automatically accesses all sandboxes and retrieves the relevant objects and topics. The state also partnered with Nahdet Misr to build more than ninety-five textbooks in a digital format. There is also a process for how to tailor the publisher content for use in Egypt which is different from many African and Arab countries that take the content as-is. Dr. Tarek and others refuse this idea totally. Publishers have to maintain and constantly update and upgrade their contents according to the agreement. This enables Egyptian students and teachers to have access to high-quality, easily understandable content. This system also helps decision-makers in Egypt to cancel printed books. We heard recently that books for Grades 11 and 12 will not be published in print format. Also, after the state mapped the sector needs it formed a partnership with Pearson Education, a giant publisher that is professional in online grading solutions.<sup>7</sup> Their systems allow papers to be graded without any human intervention.

MD As you surely know, this is a big and ambitious project that seeks to change or create an educational system for twelve years.

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7 On Pearson’s tools for automated scoring of educational assessments, see <https://www.pearsonassessments.com/large-scale-assessments/k-12-large-scale-assessments/automated-scoring.html>

MH Strategically, the state cannot build the whole system in one go. It needs extensive professional development and teacher training, which is very exhausting. They will do this in stages, as the new curriculum is rolled out. Nahdet Misr and Discovery are providing training for the areas of the curriculum covered by their books (see Chapter 14 and Chapter 15 in this volume). We also support a lot of specialized workshops to help teachers absorb new educational and teaching strategies. Teaching should be based on understanding, not memorization, it should foster participation in the classroom between students. Really, the vision is totally new. When I was in school, they always told me not to deviate from the schoolbook, to only use the textbook. Now, students are doing projects that require that they use a lot of different sources.

*LH Can you explain the Learning Management System (LMS) that is housed in the EKB platform?*

MD The LMS was designed based on the needs of the MOETE. It did not start with the EKB. The good thing about the LMS in Egypt is that it will eventually serve over twenty-two million students in more than 50,000 schools. The LMS is also connected to medical education in Egypt. The Prime Minister decided to apply it in Ministry of Health for a number of medical boards and Egyptian fellowship students. It will be a big addition to the Ministry of Health.

MH I want to add that the EKB provides professional services. There is another team that helps us with leadership programs for thirty model hospitals. Hospital leaders, either managing directors or resident managers, have been trained on modern scientific educational processes in managing hospitals. The EKB is also responsible for such activities.

### 3. Using Analytics

*LH Mahmoud Dawoud, you have talked about how the field of analytics is the future. Can you explain this in relation to analytics on the EKB?*

MD Of course, the LMS has grand goals when it comes to data. Data will provide the ability to know which governorates use it more, which schools use it more, and which teachers are able to motivate their students to use digital resources. It tells us which resources students

are not using, if they need training, and if we need to change those resources. It gives daily and continuous statistics to the decision makers so that they are able to see the educational process picture clearly.

MH When we first began the EKB in late 2016, we participated in Alexa Analytics, a subsidiary of Amazon.<sup>8</sup> It has a very high rating and serves more than thirty million websites and portals throughout the world. We sat with Majed Al Sadek who is the datacenter administrator and heads the Egyptian National Scientific and Technical Information Network in the ASRT (see Chapter 20 in this volume). According to Alexa Analytics, in the EKB's first year, our rating was 60% and we had more than 184 problems. When it launched, the EKB was ranked 25 million out of 30 million websites. Today, three years later, we are ranked 267,000 from 30 million, and this is something official, not coming from us. These statistics are available online every week and we are allowed to download them. From the 184 initial problems that we had, we now have only nineteen problems, and we have been able to solve most of them. We improved the portal and worked to improve the SEO (Search Engine Optimization). On the other hand, we reached 1.6 million users on a daily basis and have more than eight million hits every day from general users and students.

MD With regard to analytics, of course you know that a big problem is lack of information. When information is available, it becomes the tool for decision makers to reach the right decision. From the beginning of the EKB, analytics have been foundational. We monitor usage statistics to make decisions to improve access, the user experience, and the interface. I am really interested to know what interests the readers and the sources they use. We want to know, for example, if sources in Arabic and English are enough? We look not only at the national level, but at each governorate. We see which governorates need more support, training, and materials. We use this information to design the social media campaigns. We need this data to do our job effectively.

MD I want to follow up on the number of users because it can cause some misunderstanding. Registered users can login to the EKB from

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8 The Alexa Internet, Inc., a subsidiary of Amazon, provided web traffic data and rankings on over thirty million websites globally. It was formally shut down on 1 May 2022 (Vincent 2021).

anywhere at any time on the Internet within Egypt, such as from a university or the military or in the many places of higher education. Academic spaces in Egypt have an official Internet range that is registered on our servers. That is why the number of people logging on the EKB every day is over a million. We have surges before the exam period, during exams, and during the competitions we conduct on the EKB that target school and university students or general readers. We found that when we had a competition, the usage increased on average more than 200%. That is why you will constantly find announcements for competitions from different partners.

*LH* Where do you see the highest user numbers by governorate? Is it Cairo?

*MD* It is not fair to compare other governorates with Cairo, because it has by far the largest population and the highest number of students, schools, and universities. But of course, the surprises for us are the places we do not expect usage to be on par with Cairo. We find, for example, that governorates in Upper Egypt are among the biggest users of the EKB, both in basic education and higher education. So, we cannot compare Cairo because of course it will be larger, but the surprise lies in places where we expect usage to be less.

#### 4. Ranking Egyptian Universities

*LH* One of the goals stated in Egypt Vision 2030 is to improve the international rankings of Egyptian Universities. How does the EKB serve this objective?

*MD* We need analytics for the rating system of Egyptian universities. A big part of evaluating and ranking universities comes from information about researchers and publications, hours worked, and a host of other things. Actually, the EKB has greatly contributed to supporting the technical capacities that produce the statistics to improve our university rankings. This has been a part of the work that we are doing.

*MH* Following up on what Mr. Mahmoud said, the scientific research output in Egypt comes from fifty-seven different publishers, but we did not have accurate statistics before to track them. Now, the EKB has a centralized open access publishing portal that includes 400 Egyptian journals in Arabic and English. This was an initiative by the state and is

open to the world. You can fully download articles from it. For example, in the past four years, people from more than 180 countries accessed 400 journals and downloaded 6.5 million articles in English and Arabic from Egyptian journals. The biggest numbers came from Israel, Turkey, Arab and African countries, Canada, the US, and Australia.

MD Up to now, ninety-six journals with the latest scientific research from academic and scientific institutions are accessed globally are in Arabic. The rest are in English. The numbers are increasing daily. We should especially mention the journal, in Arabic, of al-Azhar University which is known as the beacon for Islamic Studies around the world. Before, publications from al-Azhar were not visible enough to the world. The EKB changed that. Now, anyone can access the journal and use the information anywhere around the world. We are currently indexing all journals in Arabic from all Arab countries with the Arab Index for Reference Certificates (الكشاف العربي للشهادات المرجعية). This is an ambitious project by the EKB. We are doing this in cooperation with Clarivate Analytics.

MH We use the same standards and criteria as the Web of Science, one of the most important citation analysis systems of scientific journals in the world. This ambitious project was in conflict with a certain unnamed Arab Country, but Egypt was able to ultimately adopt the idea and the publisher made an official contract through the Egyptian government last year. Egypt gets royalties for twelve years. So, thank God this was one of the best projects, and we have it on a perpetual basis. We are now close to publishing the first Arabic database worldwide (2020) under the Web of Science for 35,000 Arabic articles from all the Arab countries, not just Egypt.

Additionally, for the fourth year in a row, Dr. Tarek has coordinated an annual event with Leiden University in the Netherlands, one of the most important universities in bibliometric analysis. This event includes courses for three days. We participated for two consecutive years with a total of twenty-four universities and around seventeen Egyptian research institutes. This gave them the chance to upgrade the ranking system within their universities. Research institutions are learning how to invest in research and have a monetary and scientific return for the country.

MD More than nine thousand institutions around the world can see the outputs of Arabic scientific research and will be able to see the bibliographic details both in Arabic and English. This is the first international database to do this.

MH The texts we use about the Arab world usually come from foreign sources. Professors and universities do not have enough Arabic sources. To reach a political balance worldwide, we need sources and research from Arabic or Islamic culture. This is essential. So, thank God those are basic things we are doing.

## 5. Challenges

*LH What are the main challenges you face with managing the EKB?*

MD We have been facing challenges every day since we began. The first thing is that we are working in a knowledge project, which is different from working in food or cinema. A knowledge project means constantly accumulating material, and it is about behavior that changes society. These goals need time. We had a meeting with the President in November 2015, and he said himself that they know this project could take many years to reach all its objectives.

Another point is that the EKB is supposed to have content from all local entities within Egypt. We have a problem with integration because not everything exists in a digital format. And for materials that are digitized, they are not always in a format compatible for integration. This is also true for the many sources we have in Arabic from across the Arab world. The EKB team is making huge efforts with the technical teams, but this of course needs a lot of time. But thank God, the technical team is highly trained and has the technical capabilities to overcome those issues.

Another problem we face is marketing the EKB on television which is very expensive. TV channels charge hundreds of thousands of pounds for each second aired, which is very difficult. We get charged as if the EKB is a for-profit entity, which it is not. It is a non-profit entity that provides services for all citizens for free. Rather than spend money on very expensive TV ads, we use our resources to do more workshops, acquire

more content, and train people. The Egyptian TV needs to do awareness campaigns about the EKB at no cost, just as it does for hygiene or health.

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## 7. Companion Videos

Video 19.1 'The Egyptian Knowledge Bank (EKB) - Digital Learning Future', Interview by Linda Herrera, Education 2.0 Research and Documentation Project, 1 March 2020, YouTube, <https://www.youtube.com/watch?v=DmHIWZcO5vk>

Video 19.2 Mahmoud Hussein and Mahmoud Dawoud: 'Origins of the Egyptian Knowledge Bank', Interview by Linda Herrera, Education 2.0 Research and Documentation Project, 1 March 2020, YouTube, <https://www.youtube.com/watch?v=KMIjuHQjzbzg>

Video 19.3 Mahmoud Dawoud: 'How to Use the Egyptian Knowledge Bank', Education 2.0 Research and Documentation Project, 1 March 2020, YouTube, <https://www.youtube.com/watch?v=3xXJSbs-pMo>

Video 19.4 Mahmoud Hussein and Mahmoud Dawoud: 'Role of the Egyptian Knowledge Bank in Egypt's New Education System', Interview by Linda Herrera, Education 2.0 Research and Documentation

Project, 1 March 2020, YouTube, <https://www.youtube.com/watch?v=03LPmCaYsrY>

Video 19.5 Mahmoud Hussein and Mahmoud Dawoud: 'Arabic Publications and Rankings on the EKB', Interview by Linda Herrera, Education 2.0 Research and Documentation Project, 1 March 2020, YouTube, <https://www.youtube.com/watch?v=WkkISY8lfyw>

Video 19.6 Mahmoud Hussein and Mahmoud Dawoud: 'Data & Security on Egyptian Knowledge Bank', Interview by Linda Herrera, Education 2.0 Research and Documentation Project, 1 March 2020, YouTube, [https://www.youtube.com/watch?v=qzb-t3p\\_Qi8](https://www.youtube.com/watch?v=qzb-t3p_Qi8)

