The Egyptian Education Initiative...
Keys to Success

Introduction

The world is now moving from the industrial age to an era of free trade, information systems, technological innovations and an increasingly global knowledge economy. Technology opens new doors of opportunity, though at the same time places greater demands on our workforce and higher expectations on our education systems. In this fast-changing economic landscape, education must keep pace.

An ongoing challenge facing Egypt's education system is the empowerment of all students and young people with the skills required to function effectively in their future; a future shaped increasingly by change and competition.

The Egyptian Education Initiative (EEI) was launched to push forward national educational reform, focusing on guaranteeing access to high-quality education. The challenges include overcrowded classrooms, a low teacher-to-student ratio and growing unemployment.

The underlying strategy of the initiative aims to increase the effectiveness of the national education process through the use of information and communications technology (ICT). Our belief is that ICT stimulates learning skills; provides an equitable, high-quality education for all learners – regardless of number, location and special needs; and transforms teaching and learning into an interactive experience. Greater use of ICT will also advance the efforts to foster a knowledge-based society in Egypt.

The strategic objectives of the EEI focus on increasing access to technology, enhancing teaching/learning skills using ICT and the provision of learning anywhere, anytime.

To achieve these objectives, the EEI model presents an integrated solution – comprising infrastructure, professional development, and provision of digital content and applications – addressing all stakeholders and promoting active learning to empower schools and communities through ICT.

Pilot tests were conducted, and lessons learnt and success stories documented to share the experience and know-how with other developing countries considering similar initiatives.

The following sections look in closer detail at the EEI keys to success, namely: public-private partnership, infrastructure, professional development, educational resources, Web 2.0, the school management system, the model for improvement of faculties of education, monitoring and evaluation, and enabling change.

Public Private Partnership

Public-private partnerships (PPP) are a key element in the Government of Egypt's (GoE) strategy for delivering modern, high-quality public services and promoting Egypt's competitiveness. They represent a cooperative venture between the public and private sectors, built on mutual expertise, to meet clearly defined public needs through the appropriate allocation of resources, risks and rewards. The public sector benefits from extra resources coming from the private sector in terms of innovation, project management, performance measurement and technical expertise. The private sector benefits from a strengthened position and reputation within society and the opportunity to innovate and test new products and services.

In the education sector, the GoE views the PPP as a tool to speed up the change process, helping public educational institutions to compete and to provide improved services to the different stakeholders. The EEI was initiated with the support of the World Economic Forum (WEF) within the framework of the Global Education Initiative (GEI) in a step towards implementing the UN Millennium Development Goals (MDGs) and Education for All (EfA) program. The implementation model is based on PPP, inspired by the new Partnerships for Education (PfE) program of UNESCO and the WEF.

The GoE – represented by the Ministry of Communications and Information Technology (MCIT), Ministry of Education (MoE) and Ministry of Higher Education (MoHE) – in partnership with the WEF's IT members community, eight multinationals (CA, Cisco, HP, IBM, Intel, Oracle, Microsoft and Siemens), various donors, the British Council and more than 25 local ICT companies, has made efforts to identify areas of priority and potential opportunities for private sector collaboration. IT companies working with the GoE in the area of education have also contributed in the formulation of the initiative, which takes into consideration Egypt's education system challenges.

EEI Partnership and Governance

GOE
MCIT, MOE MOHE
WEF
Executive Board
Private Sector
Donors
Project Management Office PMO
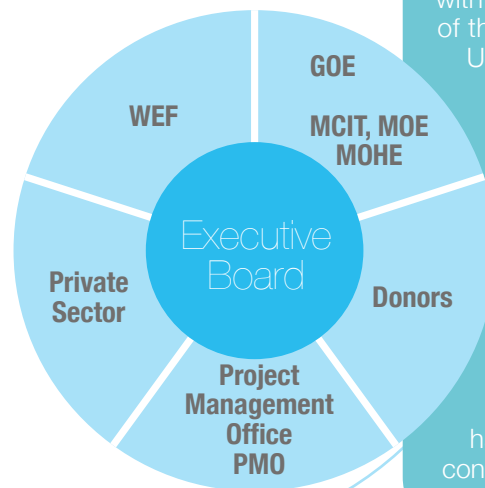
The EEI's multi-stakeholder partnership between various private sector companies has yielded a solid integrated platform. Each company proposed contributions independently, with no pressure, via a well-designed contribution matrix, and the EEI combined these contributions to form a solid whole. The success of this approach was commended by the WEF on its website in a report edited by education consultant Tom Cassidy, who wrote: "The 'contribution matrix' created by the leadership and planning team of the EEI is a very good example of such a tool. The process of building the contribution matrix required the EEI team carefully to consider and plan all initiative activities and develop clear specifications of the resources required to achieve initiative objectives. The contribution matrix allows a potential partner to know exactly what is needed that they may be able to bring to the initiative and provides a useful tool for the initiative team in assessing the potential utility of a partner's proposed involvement."

A transparent governance system was a vital component in managing the partnership to guarantee maximum efficiency. Several bodies helped to achieve this objective, including Project Management Office (PMO), the Steering Committee, the Advisory Board, and the Executive Board chaired by H.E. Mrs. Suzanne Mubarak, the First Lady of Egypt.

Infrastructure

The EEI Infrastructure Committee has undertaken several studies on effective ICT infrastructure to come up with an affordable, optimal model that takes into consideration the common challenges of developing countries including large populations, scalability, replicability and budget constraints.

For the pre-university track, two models exist: the class-based model and the lab-based model. Each model has its pros and cons. The former mobilizes interactive learning and promotes critical thinking in a blended format, where teachers use ICT resources to explain a lesson or concept, while the latter capitalizes on hands-on experience via project-based learning with a collaborative approach and peer management. Hence, the decision was taken to implement a hybrid approach, where a tailored infrastructure model would provide the benefits of both models. Importantly, this approach would be scalable and replicable.

EEI schools, of which there are 2,000, have benefited from the effective use of ICT resources. Each school is equipped with a lab (PCs connected via a local area network to the Internet) to ensure hands-on learning, and a "modern classroom" on every storey of the school for interactive blended teaching/learning. Modern classrooms include a mobile unit (trolley) – including a laptop and Internet connectivity – that can be moved from one classroom to another on the same storey. Where there is no access to the Internet, schools are equipped with a number of offline applications that provide teachers with an environment similar to that online where they can effectively pursue their day-to-day activities.

To promote effective management, PCs are also located in teachers' lounges, libraries, and school administration and headmasters' offices. With a school management system installed on these machines, the EEI has effectively put in place infrastructure for both improved teaching/learning and better administration/management.

In higher education the challenges are similar. The scope is 18 public universities, with approximately 300 faculties, 12 million undergraduates and 20,000 staff members. The track objective focuses on the promotion of e-learning as a basic component to overcome the challenges of large numbers of students versus low numbers of teaching staff, as well as the limited size of lecture rooms.

Infrastructure

The EEI has connected all public universities and national research institutes via the Egyptian Universities Network (EUN), a high-speed network (34 Mbps) linked to the Internet and Internet II, enabling MoHE to promote scientific research and exposure to global science. A videoconferencing system built on top of the network enables the broadcast and retransmission of important lectures, seminars, presentations, etc., uniting world-class specialists and local experts and ensuring that technical material is available anywhere, anytime.

In a step towards promoting e-learning on the higher education track, the EEI installed a state-of-the-art e-learning production lab in each public university. IBM helped in setting the lab specifications as well as the TOR of the technical staff and trained them to develop high-quality digital content. These labs are interconnected via the EUN to the National e-Learning Center (NeLC) under the Supreme Council of Universities (SCU), which acts as the governing body, setting the overall strategy, regulations, incentives and quality standards.

Although the lab-based model posed major challenges given the large number of students and limited space and resources, the EEI has succeeded in creating a suitable model for student labs. Helwan University was selected for the pilot, with the goal to train first-year students on basic ICT. The model supplies labs, trains trainers and provides digital content for training. The installation of 52 labs, with more than 1,000 PCs, translated into a student-to-machine ratio of 20:1.

To ensure university commitment, the EEI defined the model as a 1:1 collaboration, whereby for every machine donated by the EEI, the university management would purchase another from its own resources, ensuring not only more infrastructure but a radical change in university management. As a partner and co-owner in the project, the university is compelled to seek the most effective utilization of resources for a better return on investment.

MCIT has also established IT Clubs nationwide, focusing primarily on disadvantaged rural areas. These clubs offer a communal solution to problems of affordability, accessibility and awareness. The government provides hardware, software and Internet connections for a fee of around $0.2 per hour. An added benefit is the active participation of local businesses in IT Clubs. The EEI has also capitalized on the assistance of civil society organizations, whose provision of infrastructure has provided a gateway for the promotion of e-learning as a platform for lifelong learning.

Professional Development

The EEI Professional Development Committee has undertaken various studies to design the most suitable human resources capacity development programs to meet each track's objectives. The first phase was to examine worldwide initiatives, lessons learnt and recommendations. Inspired by a strong will to create an environment conducive to achieving the Millennium Development Goals and the UNESCO Education for All model, and taking into consideration the lessons learnt from similar initiatives, the EEI designed a roadmap for professional development for different stakeholders. This training model is based on UNESCO ICT Competency Standards for Teachers, which were announced during Year 2 of the EEI.

In parallel, the EEI Professional Development Committee studied the GoE's education reform strategies for the pre-university and higher education sectors in order to facilitate achievement of national objectives using state-of-the-art implementation models. Local challenges were underlined primarily as allocating funds and ensuring scalability, while beneficiaries were identified as including teachers, students, community leaders, school administrators and parents. It was also acknowledged that without educating each and every stakeholder in the education process on new technology, the EEI could not be expected to achieve its full potential.

The design of EEI training programs centered on guaranteeing the desired results, namely integrating ICT in the education process to support critical thinking, problems solving, active learning and the active engagement of students. The design process incorporated several stages – including the study of multinational training programs, the evaluation of relevant programs, the defining of prerequisites and the ranking of programs with respect to each other – to design progressive training tracks targeting different stakeholders and reflecting the objectives of all EEI tracks as well as national objectives.

The strategic objectives of the professional development programs on the pre-university track are to meet the prerequisites of the national teachers' cadre and to ensure that ICT is optimally integrated within institutional activities to guarantee effective learning/teaching objectives, efficient administration and management, and solid community commitment. On the higher education track, the goals are to empower all stakeholders to efficiently utilize e-learning as a fundamental educational platform. This requires basic ICT awareness of teaching staff, supporting technical teams and students.

The third track is concerned with lifelong learning. The major track objective is to define e-learning as an implementation platform for lifelong learning. The strategy is to capitalize on the availability of IT Clubs in civil society. Beneficiaries are IT Club managers and instructors. Club managers are trained on how to manage an e-learning training center as well as how to build personal soft skills (English language and presentation skills). Club instructors are trained on the methodology of the blended teaching of digital content as well as on the teaching material itself. Studies of requirements in the global job market highlight the need for a focus on ICT literacy, hardware specialization, and managerial skills targeting small and medium enterprises (SMEs).

Professional Development

A basic awareness module is provided to all beneficiaries to raise awareness of the importance of active learning, project-based learning, leadership, change management and the benefits of ICT use in the education process. Training programs include basic ICT skills (Microsoft Digital Literacy I & II), advanced ICT in education (Intel Teach to the Future and Microsoft Innovative Teachers' Network), digital content development (Microsoft), computer hardware (Cisco IT Essentials I), leadership skills, utilization of platforms to generate and manage digital content (Microsoft, MCIT), Web 2.0 skills (MCIT), English language (British Council) and security on the Internet (Cisco). On the higher education track, additional focus areas have been defined to ensure graduates are better equipped to join the global labor market. These employ, among others, Oracle tools and applications, Cisco CCNA and IT Essentials I, IBM professional e-content development and platforms, and Intel MultiCore programming.

Training material is always provided to trainees in hard and soft copies to ensure ease of use. Certifications of attendance and accomplishment are given to trainees acknowledging efforts and applauding distinguished achievements. Forums for teachers to develop digital teaching and learning material are held via the Innovative Teachers' Network (ITN), a forum established by Microsoft to encourage the exchange of innovative ideas among teachers.

The EEI applies several training approaches – both centralized and decentralized – utilizing efficiently the training infrastructure in different premises and ensuring at the same time cost-effectiveness and accessibility for all stakeholders. In pre-university training, the centralized approach (governorate-based or MoE-based) and the decentralized approach (school-based) are applied. Results show that for scalability and replicability the cascading model with school-based training was the most cost-effective, which can be attributed to the elimination of displacement costs as well as its inclusive scope. In the decentralized approach, all candidates (teachers, administrators, students and parents) are trained.

This may be considered a focused program, which results in mutual understanding, resolves peer pressure, and fosters a sense of responsibility towards local improvement and development. The centralized approach is effective when implemented for small numbers. Training inspectors and monitoring and evaluation officers from different governorates in a centralized training center allows for collaborative brainstorming, sharing of new ideas and discussion of existing challenges, as well as the benchmarking of new strategies.

Currently, the EEI is undertaking a study to compare online versus face-to-face training models with the aim of designing a training delivery framework that is scalable, cost-effective and, most importantly, that ensures the quality of the training process.

Educational Resources

Educational Resources

Training instructors in schools or universities is a necessary step to improve the teaching and learning processes, but without provision of teaching and learning content and educational resources for instructors to use with students, the impact of training would be limited. Many resources are now available online and instructors are trained on how to efficiently utilize these resources to plan for lessons. The EEI has also addressed the challenges for developing countries in the utilization of online resources, specifically the lack of localized content. In Egypt's case, the challenges include insufficient Arabic content as well as a lack of broadband connectivity in many schools.

The EEI Digital Content Committee recommended the development of an easy-to-use offline application – Computer Aided Lesson Design (CALD) – to help instructors create lessons. The application provides teachers with a set of functions that allow them to easily design new lesson plans. CALD provides a library of available learning objects classified according to subject, accompanied by a powerful search engine. Learning objects include different types of media, from PowerPoint presentations to audio and video files. The objective of the tool is to empower instructors in class and help in creating relevant e-content regardless of connectivity-related challenges. Having content available on CDs allows teachers to use high-quality multimedia effects. The application allows instructors to append, modify or add learning objects. The library is updated periodically from the new lessons created by teachers in order to ensure peer-to-peer learning. CALD is the result of a partnership between MCIT, MoE and Microsoft. The electronic library was created using the learning objects available at three sources: the content production department at MoE, local content provider companies and files uploaded by teachers to the Innovative Teacher Network website.

In order to promote postgraduate scientific research, MCIT, in cooperation with the Academy of Scientific Research and Technology (ASRT), has launched a science and technology portal. The main objective of this portal is to establish and develop the Egyptian National Scientific and Technology Information Network (ENSTINET), and to publish content for the wider scientific community. The first phase of the project involved the digitization of 1.42 million pages from Egyptian science and technology literature, while the second phase will add an additional 3.6 million pages. Data is available in full-text, bibliographic and other databases.
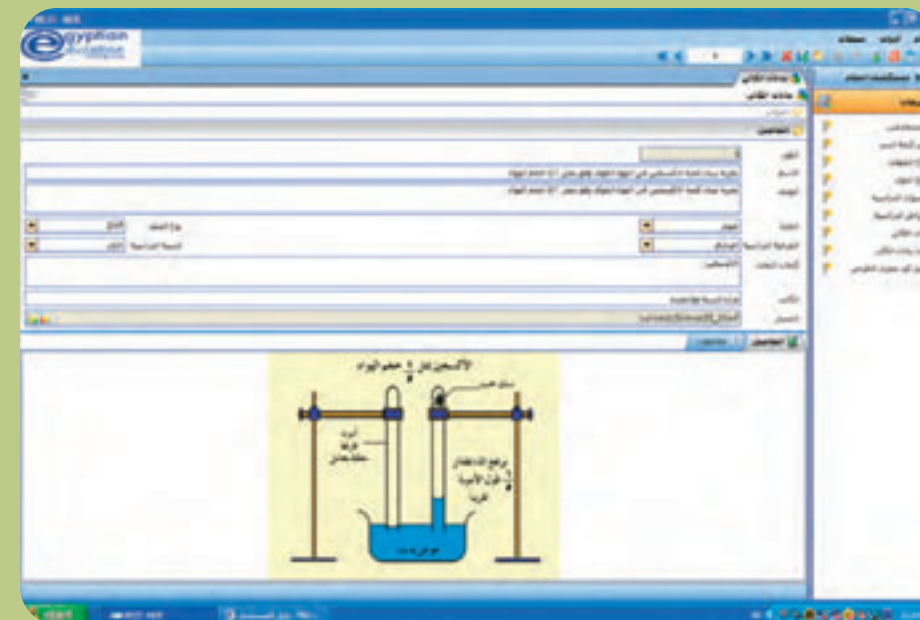
Web 2.0

Today, new and emerging web technologies are connecting young people in ways that were never before possible. Through personal blogs, social networking sites, multimedia creation and sharing, bookmark sharing, content syndication and aggregation, and other significant Web 2.0 tools that encourage communication and participation, students' worlds are becoming ever more networked and engaging, creating environments for learning and collaboration in the publishing of creative materials. Consequently, there is much interest in how such informal, out-of-school activities can be relevant and inspiring to more familiar in-school curricula.

Web 2.0, as a networked platform of learning opportunities, allows us to re-envision what we do in our schools rather than risk a growing gap between students' lives in and out of the classroom. At the core of this challenge is how well we realize the potential of these technologies in educators' professional and personal learning practices.

In order to make the most of globalization and exposure, the EEI seeks to leverage Web 2.0 technologies in the education process, and to better understand the pedagogies and literacies required to help both students and teachers adopt these technologies in a fruitful, ethical and safe way. The EEI is empowering educators through training courses that allow them to experience the transformative potential of social web tools to build learning communities and re-envision their personal learning practices.

The EEI, however, does not embrace Web 2.0 with a view solely to imposing a group of new applications, but rather with the aim of promoting practices that leverage these applications to support work and learning in powerful, paradigm-shifting ways. The merits of adopting Web 2.0 tools and activities in the education process are clear. They promise to broaden accessibility to learning, raise the general level of computer skills through the use of web tools, encourage innovative ways of learning, promote self-directed learning activities and skills, foster motivation, participation and collaboration, facilitate the personalization of learning, boost learning results, improve learning management and provide greater peer support for learning.

The Egyptian education system is no stranger to new technologies. ICT-enabled Smart Schools have been using a learning management system (LMS) for some time now, which is a great step forward. But LMSs tend to focus more on education process administration – i.e. students, enrollment, classrooms, teachers and assignments – than on "learning" itself. This gap clearly needs to be filled by more tools to promote student engagement, collaboration and participation, and here the use of Web 2.0 offers a perfect complement to LMSs.

School Management System

Based on the belief that effective school management is a prerequisite to raising the quality of education delivered, all EEI schools are equipped with a school management system (SMS). The SMS is an essential component that provides online/offline school administration, via the Internet or intranet, to handle day-to-day activities. It is a complete system designed to automate a school's diverse operations, from classes and exams to events calendars and a powerful online community, to bring together parents, teachers and students on a common interactive platform. It encourages transparency, providing real-time access to mission-critical information, effectively streamlining organizational and administrative processes. Moreover, it allows school management more time to focus on strategic tasks, total operational automation, and effective communication between teachers, parents and students.
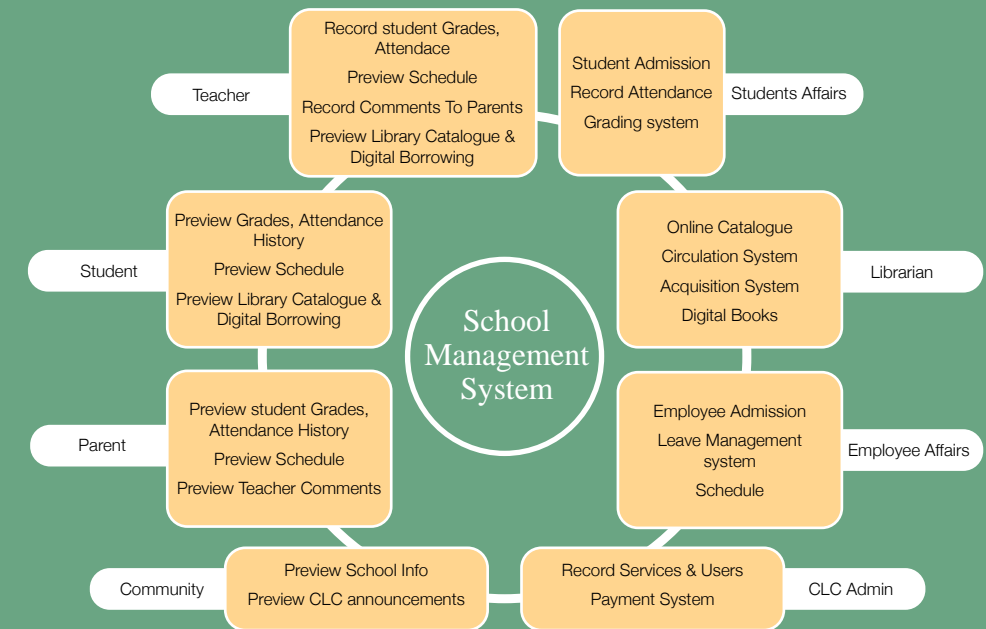
The SMS allows all stakeholders to record, report on and access all data and performance records.

For students, the system covers relevant personal data, as well as information on healthcare, courses, individual schedules, reports and performance, including attendance and grades.

For teachers, besides storing and processing their personal data, the system records all training programs and certifications as well as performance reports for further appraisal. It serves as an efficient monitoring and reporting system, indicating a teacher's professional development curve.

The SMS also helps the National Medical Insurance Organization to track and record all medical information related to students. This not only provides doctors with in-depth screenings, schedules for dispensing medication and health insurance details, but also facilitates follow up on the spread of specific diseases, in addition to physiological and personal counseling services.

The websites of EEI schools can be accessed from the EEI website, www.eei.gov.eg .

Teacher
- Record student Grades, Attendace
- Preview Schedule
- Record Comments To Parents
- Preview Library Catalogue & Digital Borrowing

Students Affairs
- Student Admission
- Record Attendance
- Grading system

Student
- Preview Grades, Attendance History
- Preview Schedule
- Preview Library Catalogue & Digital Borrowing

Librarian
- Online Catalogue
- Circulation System
- Acquisition System
- Digital Books

Parent
- Preview student Grades, Attendance History
- Preview Schedule
- Preview Teacher Comments

Employee Affairs
- Employee Admission
- Leave Management system
- Schedule

Community
- Preview School Info
- Preview CLC announcements

CLC Admin
- Record Services & Users
- Payment System

School Management System

Faculties of Education

The EEI recognizes the challenges raised by the need to develop the required ICT competencies of over one million in-service teachers, while hundreds of schools are built every year and thousands of new teachers are recruited. In cooperation with MoHE and specific faculties of education, a plan was set to ensure that pre-service teachers acquire the right ICT competencies, in line with national and international standards.

Together with IT multinationals and various stakeholders, the EEI is working hand in hand with faculties of education to integrate ICT competencies into undergraduate curricula. The EEI has set a goal to identify and disseminate models for teacher preparation that enable teachers to effectively apply technology to support student teaching/learning in compliance with the National Educational Technology Standards for Teachers developed by the International Society for Technology in Education, the UNESCO professional ICT competencies for teachers and the professional development prerequisites developed by MoE.

The EEI strategy was based on identifying an action plan to push forward the integration of ICT competencies for pre-service teachers. The plan included a survey of national standards in different countries, a study of the national curricula for faculties of education, definition of the ICT competencies needed by the 21st century teacher and the creation of a pilot. Additionally, a survey of available ICT infrastructure was carried out, with analysis of shortfalls to be addressed.

The proposed model was inspired by similar efforts in other countries and based on ICT capacity building in consecutive incremental levels. Level 1, which is mandatory, covers elementary ICT skills, providing freshmen students with training on digital literacy (Microsoft/ICDL). Level 2, another mandatory phase, trains future teachers on efficient use of ICT in teaching/learning processes.
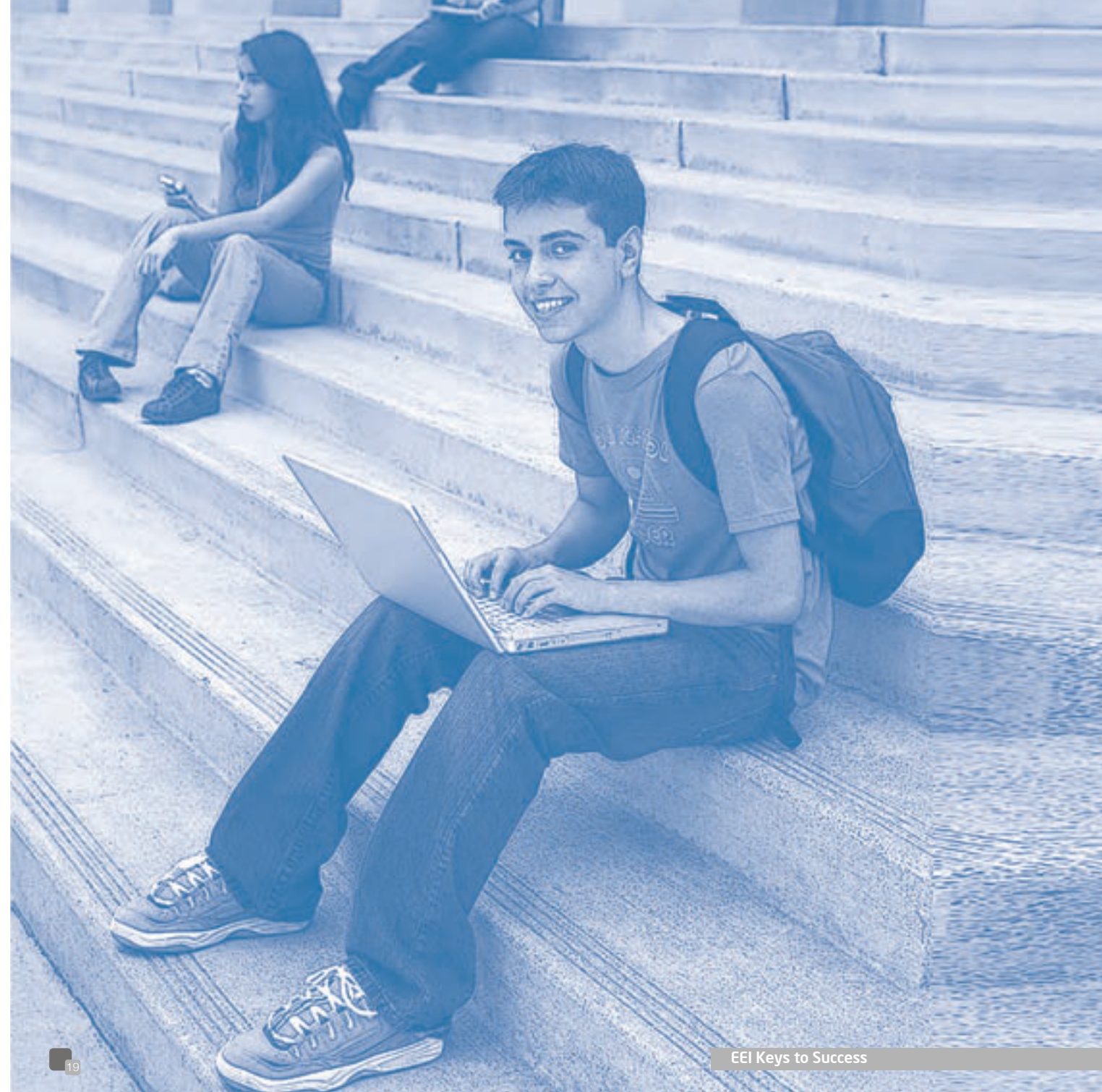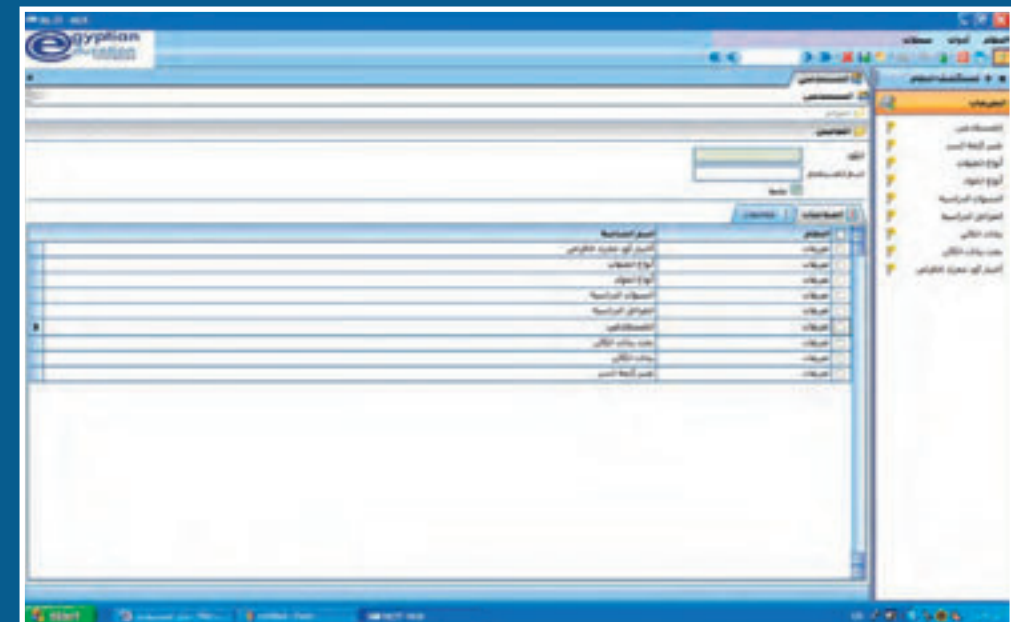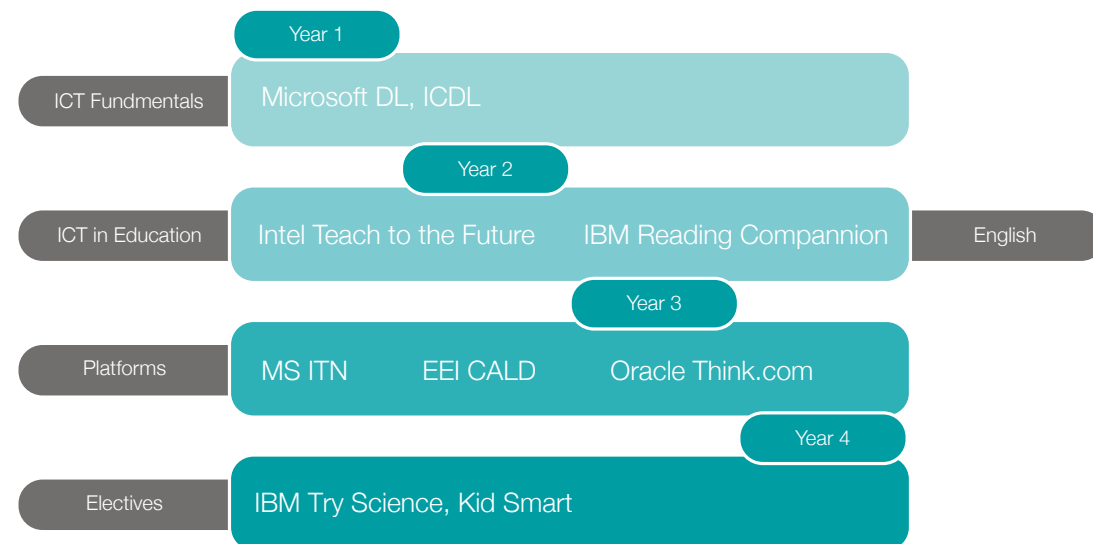
Faculties of Education

Collaboration tools as well as professional English language training constitute major elements of this level. A pilot Intel e-course, Teach to the Future, was selected for mapping and accreditation to be integrated in the undergraduate curricula of all faculties of education.

Level 3 offers a set of platforms, including digital libraries for learning objects based on international standards, localized to the Egyptian national curriculum. The focus is on how to develop educational e-content using the most advanced technical tools and identifying different educational resources. Level 4 offers another set of advanced courses that cover specialized tracks, such as science teaching, for example, through IBM's TryScience.

The complete model is being implemented as a pilot in one university for outcome assessment before application around the country.

Improvement of Faculties of Education

	Year 1		
ICT Fundmentals	Microsoft DL, ICDL		

	Year 2		
ICT in Education	Intel Teach to the Future	IBM Reading Compannion	English

	Year 3		
Platforms	MS ITN	EEI CALD	Oracle Think.com

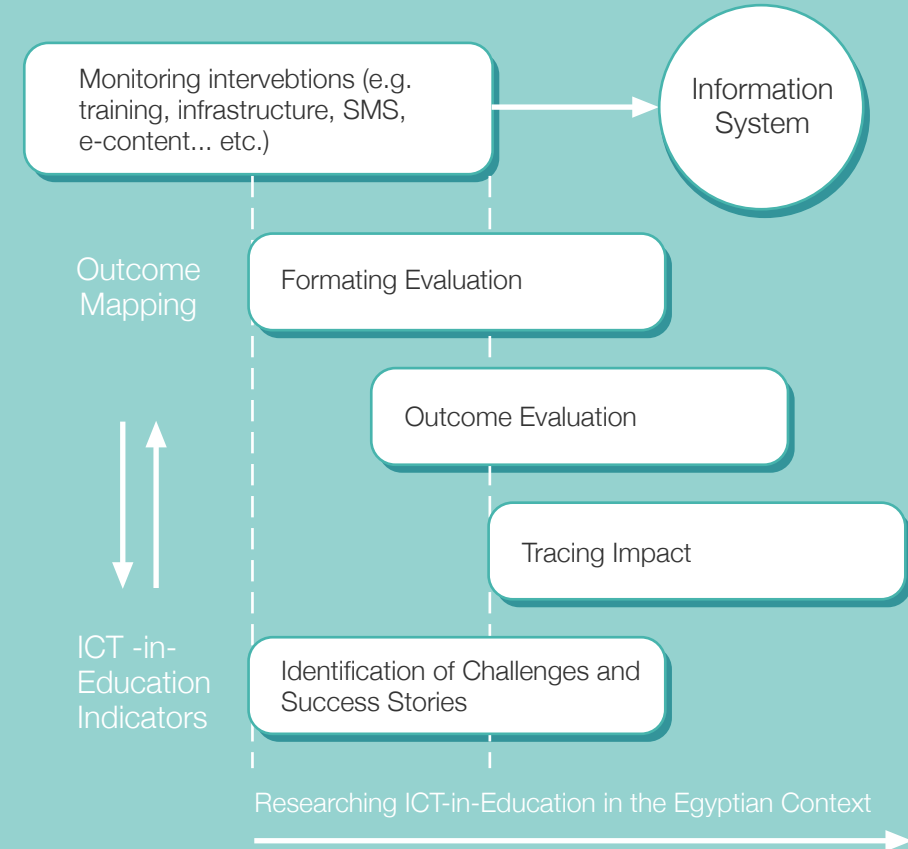|	Year 4	
Electives	IBM Try Science, Kid Smart	

Monitoring & Evaluation

Monitoring and Evaluation

Assessing the return on ICT investments in education in terms of immediate outputs, intermediate outcomes and ultimate impact, and the identification of challenges that impede these returns or their sustainability, are key concerns for project management. The EEI therefore encompasses a monitoring and evaluation strategy designed to (i) monitor activities and provide feedback to guide improvements in the implementation process; (ii) assess the extent to which these activities have led to desired changes in the target field and/or audience, (iii) identify challenges that impede the occurrence and/or sustainability of expected changes, and (iv) evaluate the impact of these changes on direct and indirect beneficiaries.

This four-pronged strategy is results-oriented, guiding monitoring and evaluation activities to ensure that the desired goals are met and obstacles overcome. Expected changes are articulated through a set of indicators in order to ensure their transparency and a clear and common understanding of the effectiveness of all stakeholders. This serves to enlighten the initiative, uniting all stakeholders behind a shared desire for success.

Key activities related to infrastructure, connectivity, capacity building, e-content development, etc., are monitored to assess their appropriateness and progress vis-à'88-vis EEI mandates. Mid-term evaluations are conducted for the different tracks in order to obtain informative data that supports decision-making. Outcome evaluations that assess changes in performance are carried out later on, and the impact at micro and macro levels is monitored on an ongoing basis.

To assist in the adoption of new implementations in ICT in the education arena, the monitoring and evaluation unit has developed a research mandate through which new approaches in using ICT for teaching and learning purposes are piloted and assessed for feasibility and scalability. With a three-pronged mandate of monitoring, evaluation and research, the EEI maintains a well-informed road map.

Monitoring intervebtions (e.g. training, infrastructure, SMS, e-content... etc.)

Information System

Outcome Mapping

Formating Evaluation

Outcome Evaluation

Tracing Impact

ICT -in-Education Indicators

Identification of Challenges and Success Stories

Researching ICT-in-Education in the Egyptian Context

Enabling Change

After creating an environment conducive to the adoption of ICT in education and focusing on the prerequisites to quality education, the EEI is now shifting its focus to help enable change – a novel step in the Egyptian education process.

The EEI was launched with the vision that it would act as a catalyst for the change – individual as well as institutional – that is essential for the education system to cope with the demands of the local, regional and international labor markets. All EEI activities were designed with a view to changing the processes of learning and teaching, in terms of both content and delivery, to initiate a change in teachers' and trainers' attributes as well as learners' abilities. As ICT-stimulated learners become self-directed learners, an active learning community is born. The EEI works on the premise that the role of technology is vital not only to bring about such progress, but also to guarantee its sustainability.

Substantial development is possible when changes are well-grounded and sustainable, when the value-added is realized, and when those who contribute to it have the enthusiasm and motivation to see their efforts through. There is a need to identify the factors that can impede progress, whether individual, contextual or systemic, and to beat them. Within the EEI framework all potential challenges are realistically approached and studied.

Two years since its inception, the EEI now has a new vision in extending its experience, lessons learnt and implementation models for the benefit of other developing countries interested in similar initiatives. In this regard, the WEF recently wrote: "Thanks to your experience, the EEI can now go beyond the limits of Egypt and even the region. The EEI can become an international role model for other countries willing to engage in a fabulous adventure, similar to the EEI."

Acknowledgements

References

The GoE is continuously mobilizing efforts to extend partnerships for development, particularly through education. The EEI, a replicable, scalable, PPP model for improving education using ICT, based on a national vision and international standards, represents a milestone in Egyptian efforts towards providing better education for all, and Egypt is proud to share this experience with other developing countries.

The EEI team extends its deep thanks to the World Economic Forum, UNESCO, UNDP, Cisco, IBM, Intel, HP, Oracle, Microsoft, Siemens and the British Council for their support and contributions. On the local level, we extend our thanks to Telecom Egypt, Nahdet Misr, Arab Academy, PC Lab and all Egyptian Internet service providers for supporting EEI efforts towards national education reform.

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The Egyptian Education Initiative (EEI) is a public-private partnership between the Government of Egypt and the World Economic Forum's IT members community.

The initiative supports Egypt's overall education reform efforts and maximizes the potential for collaborative Public Private Partnerships (PPP) to achieve its goals.

The Egyptian Education Initiative
www.eei.gov.eg

Ministry of Communications and Information Technology
www.mcit.gov.eg