



Exclusive Interview with Jordan's Minister of Education





Across the Rubicon

BY MARK GURA

“To cross the Rubicon — to embark on a mission from which one cannot turn back” is the slogan of Rubicon, an important Jordanian e-content developer (www.rubicon.com.jo). It is emblematic of the winning mindset that has put something very special in motion there.

Jordan, for those who haven't been following this small nation's reinvention as an important player in the global knowledge economy, turns out to be a remarkable example of technology-based education reform. While other countries far richer, more powerful, and with far more extensive experience are floundering, Jordan appears to be getting it right.

PHOTOS PROVIDED BY WAYNE GRANT, RUBICON AND THE JORDAN MINISTRY OF EDUCATION

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Jordan's educational reform effort, a convergence of tech-savvy educational visioning, careful planning and preparation, and lining up the right partners and resources, is producing a veritable oasis of clarity in a corner of the world not often considered front-runner central. What lessons can education policymakers from other nations learn from the Jordanian experience to help them craft better programs?

I recently had the great fortune to conduct two important interviews, one with His Excellency Dr. Khaled Toukan, minister of education of the Kingdom of Jordan, and the other with Dr. Isam Ayoubi, chief technology officer of Rubicon. What emerged is a fascinating glimpse into an education reform initiative that merits the attention of all. One



His Excellency
Dr. Khaled Toukan,
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Jordan

word of caution, however, before going any further: the reader is advised to set aside all preconceived notions about what is possible in the Middle East, and who can be a world leader in education.

Jordan has acquired funding, manpower, expertise and other essential resources through the generosity and interest of foreign organizations focused on finding a hothouse environment where the lessons and resources of the technology era can be tapped to satisfy 21st century educational goals. It has a

comprehensive plan that promises to move the education system from traditional, text-driven worker preparation, to education for participation in a post-industrial, knowledge-based economy. Furthermore, the country has made impressive progress bringing its vision to fruition. Jordan fully intends to be a model of global competitiveness and appears to be moving full speed ahead in making that happen.

From the beginning of my conversation with Dr. Toukan, it was clear how well Jordanians understand that they are not preparing themselves in a vacuum. "Since the year 2000, when I first assumed the role of minister of the Education Ministry, we started establishing grounds for remodeling and reforming our educational system to meet international standards," Toukan said. "First of all, we wanted our students to be well-exposed to other international cultures and mainly to English language speaking cultures because English, as you already know, is the international business and science language of today's modern world."

As we will see later on, technology is an important part of the effort to make Jordanian youth competent in English, as are the rest of the reform efforts.

The centerpiece of Jordan's program is its comprehensive Education Reform for the Knowledge Economy project (ERfKE), which grew from a meeting of Jordanians and experts from the United States, England, Germany and Canada to establish an education vision for Jordan. Dr. Toukan stated, "The main finding of that forum was that our students should be educated in all disciplines so that they can compete in [an] international global knowledge economy."

This was not a blue sky event, but resulted in resources to put this finding into effect. Dr. Toukan explains that the United States invested \$4 million in the project, and 11 international donors and lending agencies — including the



Jordan is located in the Middle East, northwest of Saudi Arabia. With a total population of more than 5.9 million, the country's age structure breaks down as follows:

0-14 years: **37.23%**
(male 980,345; female 938,081)
15-64 years: **59.44%**
(male 1,633,579; female 1,429,631)
65 years and older: **3.33%**
(male 84,815; female 86,927) (2001 est.)

Arabic is the official language, but English is widely spoken.

Literacy levels:
total population: 91.3%
male: 95.9%
female: 86.3% (2003 est.)

Source: http://www.layyous.com/jordan/jordan_facts_figures.htm

World Bank, British Department for International development and U.S. Agency for International Development (USAID) — contributed an additional \$50 million in grants. Then in 2003, Jordan's education ministry partnered with major global ICT players (Cisco Systems, HP and Microsoft) to test new ideas about the use of technology in schools. This resulted in training 35,000 teachers and offering new e-content in math, science, Arabic, English, ICT and geography.

The fundraising and partnerships in Jordan's education system are impressive, as are the results of the program. Let's take a closer look at what fundraising and partnerships have enabled the program to do.

There are four components to the program:

1. Improved efficiency and management, including improved communications. This entails a decision support system — a computerized system to aid in the decision-making process, as well as student and school information systems.

2. Changed teaching methodologies directed at the challenges of a knowledge economy, including the computerization and networking of schools. Jordan has already connected 3,000 of 3,600 schools nationwide. Their overall student-to-computer ratio varies from six to 12, with the integration of technology in all schools as a major goal. This is happening in concert with an effort to bring all textbooks in line with the goal of fostering research, problem solving and critical thinking skills. So far, 60,000 of 75,000 teachers have been certified as computer literate. Intel's *Teach to the Future* course is a large part of the effort to have teachers incorporate technology into the general course of study, as is the availability of e-content across the curriculum and offering information technology as a subject of study.

3. An improved learning environment is an important goal. Jordan has constructed 200 new model schools, spending \$3 million (U.S.) on each. These model schools include computer and science labs. Additionally, 1,000 computer and science labs have been added to existing schools. Overall 10,000 classrooms have been added, an increase of almost one-third.

Jordan has a far-reaching vision of a society where highly educated individuals apply their knowledge to respond to the demands of the 21st century.

4. Early childhood education. This is a significant area of investment for the Jordanian educational system as well. Currently, 50 percent of Jordanian children have access to kindergarten, where they too encounter teachers versed in new curricula in math, English, Arabic and thinking skills.

Across the Rubicon

Let's zoom in on a typical classroom in one of Jordan's new Discovery Schools (21st century classrooms that incorporate teacher and curriculum reform) and look over the shoulder of a 10-year-old girl at her computer screen. She's running one of the e-content science lessons available across the Jordanian school network. Her screen is filled with animated figures calculated, as Rubicon, its developer, states, "to engage the target audience in an educationally entertaining manner, to attract and maintain their attention and increase their retention and comprehension levels." She launches the English version of the science piece, intending to kill two birds — learning English and science — with one mouse click.



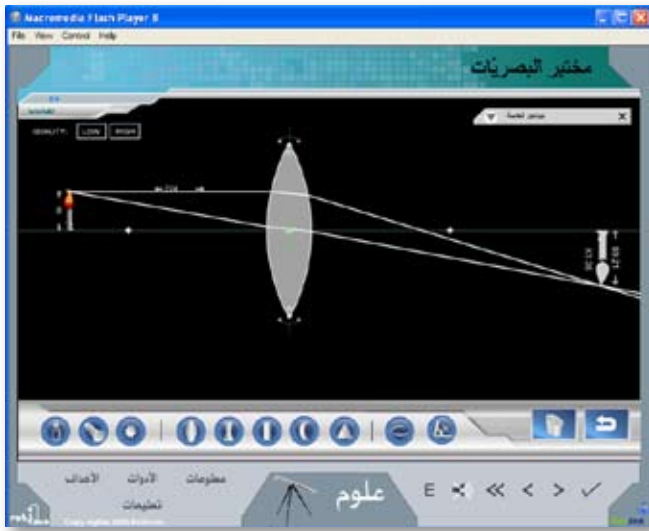
Our young friend is also looking forward to the release of *Ben & Izzy*, Rubicon's "state-of-the-art [computer-generated] animation series," as described on its Web site. The piece follows the adventures of two kids, one from Jordan and one from the United States, who meet at their grandfathers' archeological site and eventually learn tolerance by working together and learning about each other's cultures. Along the way they encounter a tomb, a genie and time travel — a fine model for the kind of tech-supported, high-engagement learning new Millennials crave.

Through Rubicon, Jordan has a powerful engine to bring its carefully crafted and well-funded vision to full flower. According to Dr. Ayoubi, Rubicon specializes in "outside-the-box content." These kinds of educational materials are intended to support fast and efficient delivery of content within the classroom. Rubicon's material is standards-based with a focus on activities that foster understanding through discussion and reflect the social dimensions of learning. Rubicon's e-content curriculum builds on previous knowledge and makes abstract concepts more accessible to students. Some of the content includes skills practice designed so students can access them as often as needed. These are multi-



Rubicon's e-content

Jordan's school network offers e-content science lessons from developer Rubicon. The animations are calculated, as Rubicon states, "to engage the target audience in an educationally entertaining manner, to attract and maintain their attention and increase their retention and comprehension levels." The lessons are also available in English.



3-D and Virtual Reality

Rubicon's e-content is multimedia-based, often featuring 3-D modeling and VRML (virtual reality) technologies, and embedded with learning tools such as special calculators. They are quite comprehensive; the math e-content, for instance, spans all strands and grades of math, including calculus and logic.

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According to Dr. Ayoubi, Rubicon's materials impact student learning in several ways: they increase the acquisition of knowledge and skills; they are engaging and entertaining, resulting in a positive, learning friendly emotional climate in the classroom; and their content fosters authentic discussions that go beyond simple Q & A, leading to more enthusiastic teaching. The effect of these factors on lower and mid-level achievers is huge.

Research and Development

Having taken sales calls from literally hundreds of digital materials vendors, I was curious about what the experience of doing product research and development (R&D) is like in Jordan. I wondered if Rubicon had the opportunity to meet directly with the Ministry of Education and if they offer the insight needed to create materials that hit the target squarely.

Dr. Ayoubi explained that Rubicon could not receive feedback from teachers on all materials Rubicon has produced due to the extraordinary volume they produce – enough e-content to fill some 2,200 class periods with roughly 1,850 accompanying worksheets. This feat outstrips the efforts

of instructional materials producers almost anywhere in the world. More to the point, this level of productivity is indicative of how Jordan's various institutions and agencies cooperate under a shared vision – no wrangling about contradictory philosophies, jurisdictions or allegiances.

Ed-Tech for Students Entering the Knowledge Economy

Similarly, Dr. Toukan spoke of a three-pronged approach in which teachers download e-content from their central data center

to their class laptops and use it as a high-powered, audio-visual teaching resource. The resulting pedagogical equation blends the efforts of all three players: teacher, students and technology.

This approach is informed by experts drawing on far more than just trials in Jordan. According to Dr. Toukan, they have been working “with the support of several U.S. consultants who have been generously commended to the ministry by the United States Agency for International Development (USAID).”

Beyond the Classroom

One of the issues encountered in the United States is a curriculum that prepares students for life beyond school, but only in a very general sense. Students come to terms with their “education” – meaning whether or not they have the desired skills and knowledge for higher education or the workplace – *after* general education is complete. This is a major disconnect. I asked Dr. Toukan if Jordan was beginning to deal with this issue. “Actually, we have been working with Junior Achievement ... introduced into Jordan through support from the U.S. Junior Achievement program [which offers free enterprise and economic education to

Ben & Izzy

Rubicon's Ben & Izzy is a state-of-the-art computer generated animation series for ages 6-11 that follows the adventures of two kids: one from Jordan and one from the United States. When the boys first meet at their grandfathers' archeological site, they just don't like each other.

But when wandering through Petra one day, Ben and Izzy stumble upon a tomb, releasing a spirited genie. The three are instantly whisked away from the present day on a miraculous journey back in time. While adventuring through time and place, learning about the past and its value, Ben and Izzy also grow to appreciate each other and their respective cultures. The lesson from each episode is that “ultimately we don't have to be the same to get along!”



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school children from elementary through high school],” Toukan explained. “CEOs of companies [and] successful leaders in business and industry are being introduced to schools to explain to students the demands of the new labor market [and] the skills that they need to know ... Today we have 40,000 students involved in this program.”

More recently, a highly-experienced media education expert from the School of Journalism and Electronic Media at the University of Tennessee signed a \$1.2 million contract to improve journalism education in Jordan. According to the university’s Web site, “Professor [Sam] Swan will work with Jordanian educators to upgrade their radio-TV facilities and seek licenses for student broadcast stations, revise journalism curriculum and update teaching materials.”

While many educational and economic world leaders are beginning to recognize the need for education to change in order to remain globally competitive, Jordan has seen

the reality of it; Jordan has internalized that experience, and figured out precisely how to do it.

USAID’s Web site states:

Education has played a transformative role in the development of Jordan from an agrarian, subsistence economy to a predominantly urban, industrialized nation. With few natural resources at its disposal, Jordan has opted to develop its human capacity. To date Jordan’s record of educational development has been impressive. Jordan’s population has a very high literacy rate of 89 percent...

The Ministry of Education began reforming the educational sector in the early 1990s. This process was then accelerated when His Majesty King Abdullah II, in early 2001, called for the “remodeling” of the education system as a critical step for Jordan to realize its vision of becoming a regional information technology (IT) hub and fully enter into the global economy. The goal of the government’s system reform initiative is to

Counterpoint

In order to better understand the clarity, focus and singleness of purpose of Jordan’s education program, it is useful to compare it to the education situation in the United States. Recent reports continue to sound the alarm about a series of disconnects and wrong turns that have U.S. education stalled at river’s edge.

- The *Workforce Readiness Report Card* released in September 2006 states that graduates of U.S. schools are “woefully ill-prepared for the demands of today’s (and tomorrow’s) workplace.”

- As part of its June 2006 announcement about the re-establishment of the Commission on the Skills of the American Workforce, the National Center on Education and the Economy’s President Marc C. Tucker stated, “What Americans still don’t realize is that our economic pre-eminence rests squarely on our education pre-eminence.”

- “At least half of eighth graders tested in science failed to demonstrate even a basic understanding of the subject in 9 of 10 major cities ...”

“Most Students in Big Cities Lag Badly in Basic Science,” New York Times, Nov. 15, 2006.

- Also in November 2006, the *Times* reported, “for the second time in a generation, education officials are rethinking the teaching of math in American schools” because of “students’ lagging performance on international tests” and the “de-emphasizing of basic drills and memorization.”

“As Math Scores Lag, a New Push for the Basics,” New York Times, Nov. 14, 2006.

- The *Times* reported proposals made by the New Commission on the Skills of the American Workforce, which includes former secretaries of education Rob Paige and Richard W. Riley among its members. The commission warned that Americans face a grave risk of losing their high quality of life to better-educated workers overseas and strongly recommended a far-reaching redesign of the American education system.

“Expert Panel Proposes Far-Reaching Redesign of the American Education System,” New York Times, Dec. 15, 2006.

create and administer an educational system based on excellence, dedicated to high standards and contributing to the nation's wealth in a global "Knowledge Economy."

It is interesting that powerful IT companies such as Cisco and Microsoft, who have had a long-stated interest in promoting the intelligent integration of technology as an essential component of meaningful and far-reaching education reform, find traction for these efforts so far from home. In January 2005, the News@Cisco Web site carried the following statement about why Cisco is involved in the Jordan Education Initiative (JEI). Tae Yoo, vice president of corporate philanthropy for Cisco, stated: "Cisco Systems has always championed the cause of educational reform. We have seen how education is a key factor that can influence the standard of living and economic prosperity of countries ... Jordan was ideal for this program, not only because of its location, size and population, but also because of the country's desire to build a knowledge economy and expand educational opportunities through technology ..."



The View from the Other Shore

Is Jordan's reform working? Dr. Toukan thinks so. "Overall the project has been going fine," he said. "There has been a mid-term evaluation by the World Bank's Mission ... They expressed their satisfaction with progress. We are now working with the World Bank and other international donors and lending agencies to extend the program for

another five years, starting [in] 2008 [and] extending to 2013."

One can only hope that other nations will learn well from the program underway in Jordan – not just undeveloped nations itching to finally get into the game, but those nations beginning to sense their fading star. Despite the United States' advantages of untold resources in funding, experience and

expertise, these elements do not appear to be gelling into an action plan squarely aimed at the future and capable of keeping its educational relevance and efficacy afloat.

"Crossing the Rubicon" is no longer an option. Education programs will either reform themselves by synching with the changes and advances that the technology revolution has brought about, or exile themselves to the irrelevant shores that the successful leave behind. It is inspiring to watch little Jordan carefully selecting its footing as it fords that divide. There is no turning back.

Clearly, what Jordan has in mind goes far beyond simply putting laptops in the hands of youngsters and having charismatic cartoon characters lend a hand in teaching basic ideas. The country has a far-reaching vision of a society where highly educated individuals apply their knowledge to respond to the demands of the 21st century. The elements required to make this vision a reality, from a knowledge and understanding of technology to an education that fosters collaboration and problem-solving skills, are all in place for Jordan. ●

