From Sand to Silicon: The Progress of Educational Technology in the United Arab Emirates

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Abstract: The development history of E-learning project in United Arab Emirates has been discussed in this paper. Much advice is taken into consideration when launching its own broad-based IT systems. Though the future is bright to develop the instructional technology efficiently in this area, there are still some challenges to overcome.

Key words: e-learning project development history challenge

The name United Arab Emirates is synonymous with accelerated change in education. The Emirates are in a hurry to be leaders. They are pouring money into programs brought in from the rest of the world, seeking the right mix or the right catalyst that will make them the cultural and educational center of the Arab world. Years of changes are compressed into months of reform. Classrooms barren of so much as an electrical outlet are being refitted to handle high tech computer mini-centers. Teachers who don't know how to type are being required to pass the ICDL—the International Driver's License for Computers. The paper will discuss the current rate of progress; problems faced, and provide recommendations for implementing changes in educational technology in other developing countries.

Mohamed Said Al Maskari, Deputy Manager for Administrative and Financial Affairs, Abu Dhabi Educational Zone, said (October 23, 2004), "I recall that IT started in government schools in the high school levels. IT was a one-period class, not a subject by itself. It was started in vocational schools and through their subjects, ten to fifteen years ago(early 1990's). Such things, as typing and documents. Students received 100 hours of instruction over three years." These preliminary ventures into computers were teacher initiated.

The first well-organized initiative was the Sheikh Mohamed Rashid project. This project was introduced into high schools in two districts, Dubai and Abu Dhabi. "Not all high schools were involved even in these two districts. The program was well planned, targeted, and had its own curriculum and trained its own instructors." The Sheikh Mohamed project was unique in that it was networked. The teacher was in charge and a "cockpit" format with the teacher in the center was implemented. Each laboratory cost half a million dirhams (about 136,000 USD). Abu Dhabi had eight labs. The project constructed the entire lab, including the buildings in some schools.

"Next the Ministry of Education introduced IT as a subject in middle schools. It was an obligatory activity period, but no grades were given. Computers were centralized into laboratories with just 15 stations per site. Another initiative took place in the model schools about ten years ago, about 1994 or so. IT classes were begun in grades K1-12."

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Abu Dhabi Education Zone (ADEZ) administrators then decided to go to a prepared curriculum created by a professional organization. The Zone wanted accreditation from a recognized source. American standards were used, but customized to fit the UAE culture. UNESCO evaluated the program and approved it. “The Electronic Futures Project is a big project,” said Maskeri, “that involves technology in all parts of the school. The E-Learning Project is one of the major parts of this project. A pilot program has been introduced to teach a coordinated IT program to grades K1-12. Introduction to Computer Technology (ICT) uses a multimedia text and teachers are taught how to teach the program.” The MENHAJ Company in Jordan designed the program. The Abu Dhabi Ministry of Education established a team in Abu Dhabi to work with the software company and imported educational experts from Canada and Singapore. The program is combined with the ICDL. The committee wanted the program to be self-contained and provide teachers and students with manuals. Self-learning is encouraged as much as possible. Assessment is built into activities. The program is divided into three levels: K1-grades3 (multi-media, cartooning), grades 4 and 5 (logic) and grades 6-9 (project learning/problem solving). Grades 10-12 are still under development. The curriculum is written in English and teachers must know English because the whole class is taught in English. The Emirates has strong English as a Second Language program and all students are expected to be bilingual upon graduation from high school.

The E-Learning Project uses a central server to connect all the schools. A private sponsor from the Presidential Court (which reports directly to the President) has committed to putting wiring in all schools, starting with 32 schools in the first year of operation. New schools will be designed to include all appropriate wiring for computer use throughout the schools.

“The major problem,” said Maskeri, “has always been infrastructure. Students can only be taught in schools with computer labs. In model schools, however, where the goal is a PC for every student, the infrastructure has been in place. Their problem is getting teachers to use the equipment.” Model schools are governmental schools that charge a limited tuition in order to provide increased services to students. Model schools are the sites of choice for pilot projects and demonstration programs.

Instructional technology during the first fifteen years was “stand-alone.” Networks were not yet available and only one printer was provided per laboratory. Computers were not provided in individual classrooms. Some administrators brought in computers, but most did without. Many, if not most, of the computers were donated. The Sheikh Mohammad Rashid project was the first project to be networked. The current goal is to network all of the schools in the Emirates with the Ministries of Education in each Zone and with the national Ministry of Education.

Hardware is selected by a zone committee consisting of zone administrators. Decisions are made based upon a key question: What is suitable? First they determine what the usage will be, then they select the hardware to match. It is expected that the initial infrastructure will be good for many years. No one is certain how long PCs will last or how exactly they will be used in the future. Keyboarding skills, for example, will probably be around longer than we think (Maskeri interview, October 23, 2004).

In the Abu Dhabi Zone, extended warrantees have been purchased and a central help desk has been provided. Training is being provided to local educators. The current computer teacher will be expected to do first level maintenance in addition to regular duties as a teacher. Due to the expense of hiring two teachers, one person will have to do both the job of lab supervisor and computer instructor. Universities are adapting their IT programs to prepare computer teachers to assume these dual roles.

The computer teacher will do the first level of trouble shooting. He or she will be able to interact with the

Zone computer help desk. The line of contacts to problem-solve is expected to be the following:

1. Computer teacher
2. Help Desk (telephone contact)
3. Help desk person travels to school
4. Telephone contact with company
5. Company person travels to school or computer shipped to company

While there are seven Emirates (Abu Dhabi, Dubai, Umm al Qaiwain, Sharjah, Ajman, Ras al Khaimah, and Fujairah), two Emirates, Abu Dhabi and Dubai, have been the leaders in technology. Abu Dhabi, the largest and richest Emirate, has three educational zones: Abu Dhabi City and immediate area, Al Ain, and the Western Zone. The Abu Dhabi Zone contains 133 governmental schools serving about 68,000 students and 110 private schools enrolling possibly more students than in the governmental schools. Between 4,000 and 5,000 people are employed by the Abu Dhabi Zone. Three administrative offices include the Education offices, Finance offices, and Private School sector. The instructional technology director works in the Ministry of Education. The Instructional Technology Department is responsible for infrastructure. Human Development Department handles the development of IT skills. Program and Curriculum puts the educational materials together for technology. The Deputy Manager for Administrative and Financial Affairs is responsible for evaluation of IT curriculum, criteria for learning, model lessons, electronic exams, and self-learning and on-line examinations. Each of the seven Emirates and each of the ten educational zones has its own plan and organization for implementing educational technology. In addition, the national Ministry of Education, headed by a Minister of Education who reports directly to the current president, is developing an overarching plan to reform all areas of education, including instructional technology, for the country.

The UAE Vision 2020 plan, which is currently under revision, plans to address the following goals for the country:

- National goal: To prepare the community for the challenges of IT (e.g. e-education, e-government, e-commerce, etc.)
- Educational Goal: To achieve the objectives of the Minister of Education’s vision for a comprehensive curriculum including a foundation in IT.
- Administrative Goal: To implement an effective electronic educational administrative and management system (Abu Dhabi Educational Zone 2003).

The vision statement of the Abu Dhabi Education Zone expresses the desire to create “An electronically connected, culturally oriented, educational institution of comprehensive quality and regional impact.” (Abu Dhabi Educational Zone, 2003).

Deputy Director Mohamed Said Al Maskari (October 23, 2004) offered advice to others who are considering launching their own broad-based IT systems:

- Secure political decision and commitment before beginning a national project.
- Plan, plan, plan
- Identify your own needs. Each country has its own needs.
- Learn from other projects. Visit other countries. The Abu Dhabi team visited Jordan, France, and Singapore.
- Create and administer surveys to receive as much input as possible.
- Determine goals.

- Put together a team of people who will be directly involved in decision-making. The members must be project-management oriented. The team must be able to set up a project and run it effectively. Provide training in project management if necessary.
- Don’t start from zero. Start where others stopped. Don’t reinvent the wheel.
- Curriculum must be redesigned to coordinate with e-learning.
- Make it clear to all parties that change will take place.
- Teachers, supervisors, and administrators must be selected and/or trained to work with and evaluate IT. They must be open to change.

Orsin (1998) advised the following:

- Don’t start your project by buying computers. When buying the equipment is the first step, the second step will be to discover that the teachers are not prepared to integrate the computer activities with their current educational practice.
- Do not decide on a national project that is based on an “equalized” distribution of a small number of computers per school. Students will not be able to get enough time on computers to make a significant difference in their achievement.
- Do not start a project before assuring long-term budget coverage. Without long term budget support for operation, maintenance, upgrading, and training, the initial investment inevitably will be wasted.

Orsin recommends the following:

- Provide a structure for the decision-making process. Create an Advisory Committee.
- Prepare a plan covering the following seven points:

1. Define pilot projects
2. Create cadres of instructors
3. Provide in-service training for teachers in the schools to be computerized.
4. Introduce computers in teachers’ colleges.
5. Plan experimental evaluations of all of the above.
6. Attract community support.
7. Write the terms and conditions for the submission of tenders for:

a. Supplying equipment, software, courseware, and maintenance.
b. Providing ad hoc personnel training.
c. Building or completing the necessary infrastructure.

Developing a comprehensive national instructional technology system in the United Arab Emirates has been particularly challenging due to the general political makeup of the Emirates themselves. The United Arab Emirates is a federation of seven emirates, each of which is governed by an emir who is completely sovereign within his own emirate. Ten educational zones, three in the largest and richest Emirate of Abu Dhabi, are loosely grouped under a national Ministry of Education. Each zone, while following a national curriculum, has been known to develop or purchase its own programs—particularly in the area of instructional technology. Private sponsors, seeing a need, have frequently stepped into finance infrastructure or purchase computers and/or software programs. The result has been to create a relatively disorganized array of services and programs. As the educational system has matured, however, the problem created by the lack of a unified and well-supported plan both politically and financially has been recognized and an intensive and comprehensive reform effort is underway at the time of publication of this article to address educational organizational issues of the entire country.

Reorganization and increased support of the budding IT program is no small part of this reform.

Thirty-five years ago, the United Arab Emirates was a pile of sand covering an almost limitless reservoir of black gold. Fortunately, it was led by a group of visionaries headed by President Sheikh Zayed bin Sultan al Nayan of Abu Dhabi. The sand is still abundantly visible, but nestled among the dunes are high-rise building complexes called “Knowledge Village,” “Smart Square,” and “University City.” Students, who often attend classes wearing veils, access the internet and share their views with scholars around the world. Desert sand is turning to high-tech silicon in the United Arab Emirates.

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