ONLINE LEARNING
Personal Reflections on the Transformation of Education

This book presents a comprehensive history of the field of online education as told by many of the pioneers who created it. In doing so, it fills in the background and provides a foundation for more recent efforts. Each of the contributors discusses their work in online education and presents a personal perspective of the field. Collectively, the chapters portray the major themes and issues that have characterized the past development of online education and will likely dictate its future. The 440 page volume consists of the following chapters:

THE CONTENTS

1. Terry Anderson, *Online Education Innovation: Going Boldly Where Others Fear to Thread*
2. Zane L. Berge, *Taking the Distance Out of Distance Education*
3. Alfred Bork, *Distance Learning Today and Tomorrow*
4. Betty Collis & Jef Moonen, *Lessons Learned About Technology and Learning: A Conversation*
5. Norman Coombs, *Transcending Distance and Differences with Online Learning*
6. Chris Dede, *An Intellectual Journey from Distance Education to Distributed Learning*
7. Peter Fairweather & Mark K. Singley, *Hammers in Search of Nails: The Interplay of Instructional Theories, Tools, and Costs*
8. Diane Gayeski, *From Stir-fried Circuit Boards to Streaming Video: Perspectives from an Interactive Media Pioneer*
9. Chére Campbell Gibson, *Online Learning: From High Tech to High Touch*
10. Peter Goodyear, *The Emergence of a Networked Learning Community: Lessons Learned from Research and Practice*
11. Judi Harris, *Curriculum-Based Telecomputing: What Was Old Could Be New Again*
12. Jesse M. Heines, *Technology for Teaching: Past Masters Versus Present Practices*
13. Beverly Hunter, *Learning, Teaching, and Building Knowledge: A Forty-Year Quest for Online Learning Communities*
14. Annette Lamb, *From Potential to Prosperity: Twenty Years of Online Learning Environments*
15. Robin Mason, *The Evolution of Online Education at the Open University*
16. T. Craig Montgomerie, *Flight of an Academic Magpie: From Face2Face to Virtual Presence*
17. James L. Morrison, *Experiencing the Online Revolution*
18. Frank Odasz, *Big Skies and Lone Eagles: Lending Wings to Others, Online – A Rural Perspective (with Appendix by David Hughes)*
19. Jason Ohler, *Who's Afraid of Distance Ed?*
20. Thomas C. Reeves, *No Significant Differences Revisited: A Historical Perspective on the Research Informing Contemporary Online Learning*
21. Margaret Riel, *Building Communities of Learning Online*
22. Alexander J. Romiszowski, *Online Learning: Are We on the Right Track(s)?*
23. Marlene Scardamalia, *Online Learning and Knowledge Building Environments*
24. Robert J. Seidel, *Learning Without Boundaries: Prospects and Perspectives for Online Learning*
25. Lorraine Sherry, *Diffusing E-Learning: Myths, Questions, and Experiences*
26. Robert Tinker, *Learning Through Online Collaboration*

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CONTENTS

Articles

Regular Features

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**Volume L
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About This Issue

A special issue
covering ICT and
e-learning in the
Middle East; plus
regular features

A Special Issue

Introduction to Special Issue on ICT and E-learning in the Middle East

Badrul Huda Khan
McWeadon Education, USA

Mohamed Ally
Athabasca University, Canada

Guest Editors

This special issue is dedicated to our friend, Professor Robin Mason.

While attending an e-learning conference in Dubai organized by Hamdan Bin Mohammed e-University in February, 2009, I discussed with Robin, a pioneer in the field, my interest in doing a Special Issue on "ICT and E-learning in the Middle East" for *Educational Technology* magazine. I was very happy when she readily accepted my invitation to serve as a co-editor for the issue. She reviewed several proposals for the special issue, and then I did not hear from her. After some time had passed, Dr. Josie Taylor of the Open University informed me of Robin's sick leave from work. Robin passed away on June 15, 2009. We will miss her. *–Badrul Khan*

About the Issue

This issue contains articles from several countries in the Middle East, though it is by no means an exhaustive representation of ICT (Information and Communications Technologies) and practices in the Middle Eastern region. Within the scope of our efforts, we are able to cover practices with contributions by authors from: Saudi Arabia, Qatar, Turkey, Gaza, Oman, Iran, Israel, Jordan, Lebanon, United Arab Emirates, Morocco, Malaysia, and Jordan. We would like to thank Dr. Josie Taylor of the UK Open University, who reviewed several articles for this issue and provided feedback for improvement.

In planning and preparing for this issue, we received encouragement and support from many individuals, including: Hamza Ghulman, Lawrence Lipsitz, J. Goodlett McDaniel, Robert Wisher, Abdullah Almegren, Mohammed Al-Abdulkareem, Ibrahim Al-Mohaissin, Mishan Al-Otaibi, Mauri Collins, Alice Bedard-Voorhees, Mohammed Aalsalem, Ali Al Musawi, Abuhena Saifuliislam, Mohammed Afifi, Mustafa Hariri, Nouf Kahtani, Keysha Gamor, Solaiman Ali, Abdullah Almohaya, Abdullah Alwalidi, Aysha Murad, and Her Excellency Ambassador Houda Ezra Nonoo.

The Authors in This Issue

Abdullah Alwalidi and **Paul Lefrere** describe the progress at King Khalid University in the Kingdom of Saudi Arabia in developing and implementing a user-centered road map for teaching and learning, with pervasive e-learning as a core element. The article addresses ways to capture and share expertise and how to provide and increase personalization.

Martha Robinson and **Mohamed Ally** describe a study that examines female Arab students' experiences in a pilot eSchoolbag project in Qatar. The project used a blended approach, which combined face-to-face instruction with e-learning resources and strategies. The study found that educational values, English-language ability, and experience with computers emerged as structural issues that affected students' e-learning experience. Three essential elements of the experience of female Arab students were motivation, belonging, and adjustment.

Yasemin Gulbahar and **Filiz Kalelioglu** explore the use of proper instructional techniques in online discussions that lead to meaningful learning. Their research study, in Turkey, looks at the effective use of two instructional techniques within online environments, based on qualitative measures. "Brainstorming" and "Six Thinking Hats" were selected and implemented through online discussions.

Anthony 'Skip' Basiel and **Ralph Commins** describe the process for training Palestinians in Gaza in developing e-learning courses using WebCT. The training was delivered at a distance using information and communications technologies. The project used a problem-based approach to introduce e-learning concepts and practice for the pedagogy of online content, learning theory, and management.

Andrea Hall discusses innovative, pedagogically-sound design principles that were developed from theory and refined in an Arabic learning environment, in Oman. These principles are recommended for designing online learning that is culturally compatible with the learning preferences of the Arab world.

Carol Goldfus and **Edith Gotesman** describe a study in Israel to determine whether assistive technology, specifically text-to-speech software, can be used to help

students with dyslexia cope with academic texts in English. Results from the study indicated that text-to-speech software enhances students' immediate and long-term academic reading performances.

Hazel Owen describes a 40-week Computer, Research Skills, and Projects (CRSP) blended learning course designed and implemented at Dubai Men's College. The learning employed a design using socio-constructivist principles in a blended approach to cater to the learning preferences of students.

Ismael Rumzan, Imran Chowdhury, Saudah Mirza, and **Raidah Shah Idil** note that the use of ICT in the Middle East is expanding at a fast rate; hence managers and decision-makers must decide on the best learning solution for their organizations. This article describes how a small team of individuals in Jordan developed an effective learning solution to a social problem. This may provide some useful lessons for other organizations which would like to start using e-learning or are using e-learning but are facing financial constraints.

Souâd El Harrassi and **Michel Labour** outline how Moodle, as an open-source Learning Management System, can be made more interoperable. This was done by testing, in Morocco, two software standards compatible with socio-constructivist norms.

Uma Narasimhamurthy and **Khuloud Al Shawkani** describe a model, used in Saudi Arabia, for teaching Java Programming Language through Dynamic Learning Objects. The design of the learning objects was based on effective learning design principles to help students learn the complex topic of Java Programming. Visualization was also used to facilitate the learning of the concepts.

Reeja Riyaz reports on the evaluation of the use of Smart Boards in learning and teaching second language writing skills in Oman. Results showed that the use of Smart Boards in learning and teaching improved students' second language skills.

L. Heidi Primo examines women in Islamic countries in general with regard to sustainable futures, equity, and social justice. Some barriers to ICT use for women in the Middle East include access to computers, gender discrimination by employers, marginalized political participation, high rates of illiteracy, and lack of independence. Distance education offers a pathway to gain legitimate, respectable higher education qualifications and opens new pathways to learning, but online learning faces obstacles and potential cultural barriers in Islamic countries.

Fawzieh Makkawi describes the role of the head-teacher (or principal) in successful implementation of ICT in schools. It highlights the importance of the headteacher to understand and lead the change process and having a clear and shared ICT strategic plan. The article, based on work in Lebanon and other countries in the Middle East, also explores the major factor of ICT progress, the continuous professional development for school staff in general, especially headteachers.

Emad Ghaeni and **Babak Abdehagh** describe the current state of e-learning in Iran and look into the future of e-learning in virtual universities and organizations in Iran. The article also presents a model for implementing e-learning in Iran.

Aytekin Isman, Zehra Altınay Gazi, and **Fahriye Altınay Aksal** present a study that examined students' perceptions toward the online learning process. The results indicated that both cultural background and personal qualities affect the students' perceptions of online learning. ☐

Making E-learning Invisible: Experience at King Khalid University, Saudi Arabia

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The authors describe progress at King Khalid University (KKU) in the Kingdom of Saudi Arabia in developing and implementing a user-centered road map for teaching and learning, with pervasive e-learning as a core element. They named the approach "Invisible" e-learning. As part of it, they are investigating ways to capture and share expertise, as in master classes, and ways to provide and increase personalization.

Abdullah Alwalidi is Director of the e-Learning Center at King Khalid University, Saudi Arabia. **Paul Lefrere** is Senior Research Fellow at the Knowledge Media Institute, Open University, UK; Professor of e-learning at the Research Centre for Vocational Education, University of Tampere, Finland; and Partner at Strategic Initiatives Inc., USA.
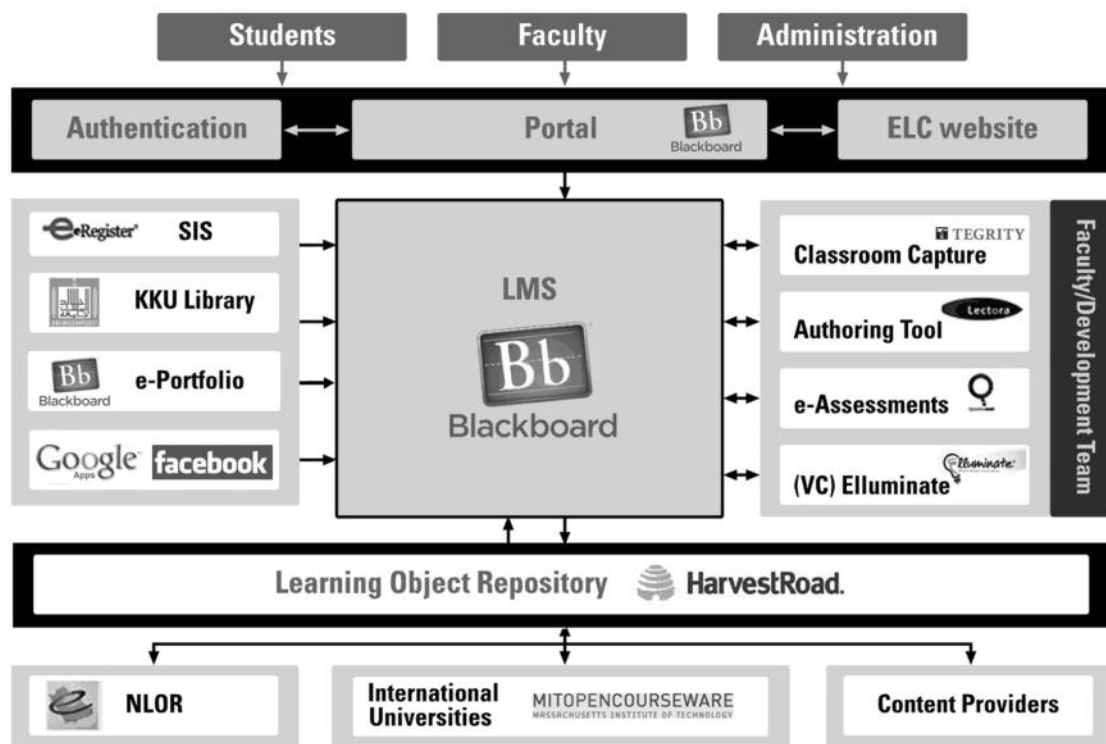
Figure 1. KKU e-learning and e-knowledge platform.

Introduction

History of E-learning at KKU

The King Khalid University (KKU) is one of the largest universities in the Kingdom of Saudi Arabia (KSA) (more than 70,000 students; over 20 sites, with more campuses being built). It offers courses in a very wide range of subjects (e.g., medicine, science, engineering, liberal arts). Technically, its current e-infrastructure is the best available commercially in KSA, and compares well with many US universities (see ***Figure 1***). A portal run by the e-Learning Center (eLC) leads to a robust, fully integrated Learning Management System (LMS) and supporting applications and knowledge resources including Facebook and Google.

This LMS extracts data from the Student Information Systems (SIS), the KKU library, and Blackboard's e-Portfolio. It is supported by the Classroom Capture Application, Authoring Tools, e-Assessments, Virtual Classroom Tools, and a highly capable Learning Object Repository (LOR) that can share learning objects drawn from a variety of international open learning resources and content providers. As a whole, the system offers ease of use; high integration with administrative systems; easy access to commercial training and support; and, prospectively, 24/7 availability.

The infrastructure began with a single-campus implementation in 2004. Expectations were high: at that time, e-learning was strongly hyped in the West "as the

means of making education better, cheaper, more available or more responsive" (Mason & Rennie, 2006). Strong claims about its efficacy and acceptability were made, but there was:

> ...little or no supporting evidence and insufficient understanding of the complex relationships involved [leading to]...disappointing levels of uptake, of engagement, limited development of 'learning communities' in HE courses...a disparity between the potential learning benefits that are claimed for e-learning and the outcomes from actual learning activities and experiences that are observed in practice....When it comes to e-learning, both teachers and learners don't always get what they hope for. (Kirkwood, 2009)

In the two years of the first implementation, the eLC focused on urgent issues: ensuring that the infrastructure worked; developing high-quality content to make it worth using the system; and training people to use the technology and the content. All of those steps were necessary to get the system ready for use, but the steps were not sufficient to ensure it was used. Uptake and engagement with e-learning were lower than expected. Initially, it was not realized that the experience in KKU mirrored the experience of many colleges in the West. So the lack of uptake was interpreted as reflecting some unseen deficiency in KKU's "absorptive capacity": its ability to appropriate innovations and benefit from them (Graeme, Jane, & Thomas, 2003).

Experience elsewhere in the Gulf region shows that

absorptive capacity can be low, and can be reduced by cross-cultural differences (Ibraiz & Paula, 2009). On the face of it, lack of absorptive capacity seemed a likely cause, especially given there were shortages of skilled staff; the shortages delayed the cross-KKU exploitation of the e-learning investments, and progress at the course level was slow. This led to a re-appraisal by KKU leadership three years ago. They made a long-term commitment to increasing KKU's capacity to innovate, by improving the educational process using the latest tools and methodologies including pervasive e-learning as an "invisible" core element. They decided to refresh the strategy; to re-launch e-learning to ensure achievement of the original goals; and to re-appraise and if necessary update the goals and the road-map for e-learning, in the light of today's KSA national priorities and wider changes in the world.

Re-launching E-learning

The revitalized eLC team put considerable effort into planning and preparations for the re-launch of e-learning at KKU, and paid much attention to identifying critical success factors for improving uptake, engagement, and learning outcomes. To illustrate: in the first implementation, the eLC had focused on content and technology issues. As part of the re-launch, a much broader perspective was adopted: focusing on enabling and empowering people (faculty and students) to achieve their own goals, to help them feel comfortable and confident about adopting e-learning and related innovations. The new approach was determined intuitively and pragmatically, rather than as the result of a literature search; in this approach, e-learning was introduced as a fully-embedded and integral part of all teaching and learning activities instead of as a standalone part.

The re-launch paid off. There is much growth in the use of e-learning. Internal authoring capacity has shown a huge increase on previous years. Because of this resurgence, the eLC now performs much better on mainstream benchmarking metrics, such as how many students take courses involving e-learning, and how many students achieve a passing grade.

Next Steps

Following the successful re-launch of e-learning at KKU, the eLC is working with KKU leadership, including deans, to co-create a strategy and tactics for their use of e-learning that leads to a new level of integration and completeness. The value propositions include: sharing and reusability of content and best practices; and seamless integration of e-knowledge and e-learning platforms, flexibility, consistency, simplicity, and enhanced learning and sharing at reduced costs.

As part of its preparations for achieving each of those goals, and positioning itself for complementary goals (e.g., to do with greater collaboration, knowledge sharing, and links with informal learning), the eLC is organizing

international master classes to demonstrate a variety of approaches to both the development and the implementation phases of e-learning, that make teaching practices explicit and visible, and that show ways not just to replicate current academic practices but to supplement or extend them or find radical alternatives to them.

The repository functions of the eLC systems help here. They can be used to give KKU faculty easy access to examples that range from the *transmissive* to the *facilitative* and the *self-directed*. As observed by Kirkwood (2009), *transmissive* e-learning involves "the presentation of information and student interaction with resources and data that the teacher has provided or recommended...[and tasks that]...tend to reward the acquisition of accurate answers or the application of correct procedures," while *facilitative* e-learning tries to "...promote the active engagement of learners...through discussion and collaboration...to allow learners to demonstrate how their understandings have developed and the appropriate application of their knowledge and skills in novel situations." The eLC supports those approaches. In principle, the eLC can also support learners who choose their own path and goals (*self-directed* e-learning) but, as yet, not many students ask for this; they are more interested in basic functionality: being in charge of the pace, place, time, and quantity of their learning.

The master class program brings in international experts. Each master class is recorded and sections are then made available online. Attention is being given to further exploiting each section; for example, each teaching point made during master classes can become the basis for discussions using social networking (Mason & Rennie, 2008). In parallel with those investments, consultants are seeking out complementary materials and approaches. Potentially this work is very broad. Faculty new to e-learning will need information and training on the basics of interactive education (Golub, 2000). They and their more experienced colleagues can benefit from re-assessing their own beliefs and practices concerning teaching and assessment—and their impact on the experience of learners—to clarify "why e-learning activities are to be undertaken and the rewards expected to be derived" (Kirkwood, 2009). This revealed gaps in research on how to enable students to succeed when they encounter ideas from an unfamiliar culture taught with unfamiliar pedagogical strategies (Robinson & Ally, 2009). A corollary is how to facilitate cross-cultural changes in mindset and practices by individuals and groups (Peng & Yufeng, 2008; Signer, 2008; Sturko & Holyoke, 2009; Thompson, 2009).

What was needed was an approach that filled the gaps...

"Invisible" E-learning

The eLC focus changed from content and technology to achieving learning outcomes by empowering and enabling people (faculty and students) to improve their

current practices and/or innovate with new practices. The eLC deliberately avoids trying to persuade people towards a goal of adopting e-learning best practices from elsewhere. Instead, the eLC supports people with their wider goals; as part of that, they find ways to embed e-learning in their everyday practice, that is, it becomes "invisible." In the experience of the eLC, many faculty are more innovative when they are in charge of innovating their teaching, and discover that "I can do much more with those new tools than simply lecturing." All this is part of the eLC role. We find there is no one best approach in implementing e-learning. We facilitate change, we do not impose it. With the help of the eLC's emerging network of partners, faculty and students start to see more possibilities with e-learning.

E-learning as a Platform

In KKU, e-learning is considered as a platform instead of as e-education. Similar to the idea of YouTube, faculty and students are encouraged to use e-learning tools to achieve their own educational goals in their own ways (connect, sharing, interaction, producing, innovating, etc.).

Facebook and Google Are Here

E-learning is used at KKU as a new way to engage students in learning. One approach to achieve that is by reaching the students using their own tools. KKU students are enabled to use e-mails, Google tools, and Facebook to access their courses and to participate in knowledge, communication, and construction. The opportunity is to work within those norms to make students at ease, and to empower them to link some of their informal peer-to-peer discussions and their official campus discussions, in ways that stop treating them as if they are "working alone at their computer as in a correspondence model of distance education [since]…the so-called isolated student may just as likely to be carrying on online conversations with many others" (Haythornthwaite, 2009). Tactics for facilitating awareness and reflection in learning in general need to be extended to e-learning and social networks (Mason & Rennie, 2008).

E-learning for Everyone

As a result of the integration between KKU student information systems (SIS) and the KKU learning management system/BlackBoard, all KKU courses (now more then 5000 courses) are accessible to everyone. There is no need to register or submit any form to teach online, as everyone is online by default. In some cases, students started using the LMS to interact and share files with their peers without any involvement of the KKU infrastructure.

Concluding Thoughts

Much remains to be done: linking e-learning needs and opportunities that have been ignored or largely not noticed, and processes in learning that have mostly been under-studied or unobserved; also, making rapid advances towards global competitiveness by nurturing an entrepreneurial mindset, as part of a new approach to education, where King Abdullah has led the way with reforms.

In recognition of those wider goals, the eLC's strategy now includes ideas and approaches that facilitate the acquisition of the advanced study skills, higher-order thinking skills, and high-value socio-technical competencies identified in reports as needed for success in the Knowledge Economy.

Examples include teaching sense-making and critical thinking, creativity and innovation, and showing students how they can learn by making mistakes. Changing the culture via strategies that are based on respecting, enabling, and empowering people is proving achievable at KKU. ☐

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Female Students' Experience in E-learning: A Study from Qatar

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This article describes a study that examines female Arab students' experiences in a pilot eSchoolbag project. The project used a blended approach which combined face-to-face instruction with e-learning resources and strategies. The study found that educational values, English-language ability, and experience with computers emerged as structural issues that affected students' e-learning experience. Three essential elements of the experience of female Arab students were motivation, belonging, and adjustment.

Introduction

The advent of new technologies that facilitate communication and information-sharing worldwide have opened new opportunities and challenges in the design of e-learning. As research and experience expand, educators become more aware of the need to design programs that respond to the specific needs of diverse learners (Andone et al., 2009; Hedberg & Ping, 2004; Kanwar, 1999; Kumar, 1999).

In the country of Qatar, the government has embarked on an ambitious plan for reform of the education system (Supreme Education Council, 2006) in order to prepare citizens to fully participate in a modern information society of the 21st century. In the K–12 sector, grade seven students at Al Wakrah

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Independent Girls' School received e-Schoolbags containing Tablet PCs as part of a pilot project intended to develop technical and intellectual knowledge and skills and to integrate in-school and at-home learning activities (Supreme Education Council, 2006). The purpose of this study was to explore the experience of grade eight female students participating for the second year in the eSchoolbag project, and to suggest approaches to enhance their motivation and achievement in the program.

The theoretical framework for the research draws on literature about education among Gulf region Arabs, and gender in online learning.

Education in the Gulf States. In order to achieve their economic and social goals, Qatar needs to produce a modern, highly trained, and motivated industrial workforce while maintaining traditional Muslim values (Kapiszewski, 2000). Bahgat (1999) noted deficiencies in the education systems of Gulf countries due to a mismatch between educational traditions and the needs of an information society, the imbalance between indigenous and expatriate labor skills, and the traditional gap between men and women, which dictates separation and precludes women's full participation in the workforce. Research from diverse areas throughout the Gulf illustrates efforts to address these deficiencies, especially in the realm of gender issues (Al Kharafi, 2003; Beatty, 1996), with varying degrees of success.

Females in e-learning. Recent studies have shed light on gender differences in the use of technology for learning. Gender-based differences have been reported in the amount of time spent on computers, the purpose of use, confidence, features used, and preferred styles of communication.

Venkatesh and Morris (2000) provide evidence that gender plays a vital role in shaping initial and sustained technology adoption. Asandului and Ceobanu (2008) found that Romanian female students spent about half as much time working on computers as males, while Inal et al. (2008) report that among Turkish high school students, males use the Internet to a greater extent at home and at Internet cafes, whereas females lead usage in school labs. The purpose of Internet use also differed by gender, with males using the Internet to a greater extent for shopping, chatting, group discussion and forums, reading the news, downloading software, e-mail, and gaming, while more females used it for accessing information and doing homework (Inal et al., 2008; Tekinarslan, 2009). Romanov and Nevgi (2007) found that female medical students more actively use video, multimedia, and collaborative tools and consider these significantly more useful for learning than their male counterparts. These practices were found to correlate with higher grades.

Studies that describe gender-related differences in

satisfaction in online communication have yielded conflicting results, most likely due to differences in the design of the communication, whether or not it is moderated (Ally & Fahy, 2005; Fahy & Ally, 2005), the level of teacher presence (Lewis, 2007), and the gender composition of the group (Gülbahar & Madran, 2009; Prinsen *et al.*, 2007; Savicki & Kelley, 2000). Herring and Martinson (2004) assert that, online, females use language in different ways than males, preferring to justify, express emotion, support, and use polite language to a greater extent, while males generally communicate in more assertive, self-promoting, and challenging ways.

Müller (2008) found that personal growth and sense of community were major themes in support of women's persistence in online programs. Diverse research indicates a female preference for recognition, support, acknowledgment, cooperation and camaraderie (Lewis, 2007), and social interdependence (Jaffe *et al.*, 1999), as well as the willingness to initiate discussion and share information in collective knowledge construction (Farmer, 2008) and its concrete application.

The segregation of male and female students in Gulf Arab educational institutions magnifies the gender characteristics of each in e-learning and necessitates gender-specific study in order to identify the optimal approaches and design for all students. It also provides the opportunity for gender-related study in an environment where there is minimal cross-gender influence. Knowledge gleaned from such study can inform the development of e-learning, in the Gulf and in other regions of the world, which addresses the particular preferences of females.

The Study

This study utilized a qualitative approach to examine students' emotional and intellectual experiences, as reported by the students themselves, in the context of their cultural and educational environment (Cresswell, 2003; Neuman, 2003). The intent was to describe the experience of a particular segment of the population in light of current theory, in order to broaden the general understanding of that experience for the group in question. It did not seek to explain or predict, and the development or revision of theory was not a goal, due to the limited generalizability of the results.

Data Collection and Analysis

In order to obtain an accurate understanding of the participants' viewpoints, the following steps were taken:

1. Letters of introduction and permission for the head administrator, parents, and students, a pen-and-paper survey containing open-ended questions related to the research questions, and a semi-structured interview plan designed to clarify and build on themes identified from the survey were prepared and translated.

2. The researcher secured the assistance of grade-level teachers, who distributed the surveys to eligible students, providing background information and answering student questions in English or Arabic as required. Students were invited to complete the surveys in English or Arabic.

3. Survey responses were translated into English as required, then analyzed according to the psychological approach espoused by Moustakas (1994). In recording codes, the participants' original voices were maintained through the use of direct quotations from the surveys. As recommended by Barritt *et al.* (1983), disagreements were not ignored, but rather noted as part of the procedure. Once all survey data had been analyzed, interview questions were revised to clarify or expand on themes that arose.

4. Group interviews with three students each were conducted at the school. Interviews were audio recorded to facilitate natural flow of conversation and to maintain the participants' authentic voices. Participants were encouraged to give concrete, detailed descriptions and examples from their own experience. Once all interviews had been completed, they were transcribed and all data was compiled according to themes identified from the surveys.

A second round of interviews sought validation from the participants of the preliminary report. Discrepancies were addressed by seeking input from the range of participants, and then triangulating the responses. According to Neuman (2003), reliability in qualitative research results from internal consistency, that is, whether data is plausible given all that is known about an event. This second round of interviews served to confirm this reliability.

Results

In the students' voice. A total of 12 students responded to the survey, seven in Arabic and five in English. Computer knowledge and home access varied among participants. The following is a summary of their comments, in the students' own words when possible:

Overall satisfaction. Students ranged in their appreciation for the *eSchoolbag*: "Some people like laptop, some people hate the laptop. Not all the class. They are different." Two qualities that students appreciated in the course material were "fun" and comprehensiveness. One recalled enjoying the games in her courses. Another, however, found content-related games uninteresting.

Learning materials. Language of instruction was a relevant issue as none of the students at the school

have English as their first language, but all course material is presented in English. Throughout the surveys and interviews, it was apparent that those students who displayed greater ability and confidence with English were more positive and self-directed about e-learning.

While some students enjoyed the convenience of having Science experiment designs, videos, and results in their laptops, others preferred hands-on experiments. In Math, the students generally expressed satisfaction with the design tools on the laptop. All indicated that their marks were higher in Math when working with the laptops. One student expressed concern, however, that she would be unable to do as well if at a later date such tools were no longer available. For English, teacher presentations on a "smart board" were combined with student worksheets and homework on their laptops. Most appreciated this mixed approach, as it created a comprehensive unit on their laptops which they could review.

Technology. Technology support was an important component of the program, as there was a wide discrepancy in computer skill experience among the students and their families. Some interview respondents described feeling knowledgeable about using the laptop, indicating that it was "easy" and that they "didn't have any difficulty with it." They related that they had received initial training and felt welcome to ask for help from the Program Manager or her assistant as required. One student recalled (translation) "maintaining, how she fixed the computer problems, how to make it easier. She saw how to do it and she can do it herself. She would like to be an engineer for ICT and computers."

Teaching/Learning Activities. Teachers' duties included presenting some lessons, helping students to use the technology, sending work to the students, supervising their use of the Websites, and providing translation when required. The multimedia nature of the presentations appealed to some students, and the variety of activities also provided motivation. While most students responded positively to this content-centered design, some students preferred traditional teacher-centered explanations and presentations. The students felt positive about the teachers' role as facilitators, recognizing and exploiting learning opportunities within and beyond the course material. They appreciated teachers' flexibility and openness to answer questions, clarify problems, negotiate answers, provide deadlines, and even specify the medium used to complete assignments. Students valued the opportunity to use the online tools to track their own academic progress and the reinforcement provided by instant electronic assessment on some tasks.

Academic Support. When asked whether and from whom they access help, students recalled consulting the self-correcting programs, the Knowledge Net (Knet) Website, and their teachers in order to check their understanding of new material. Some described examples of their own initiatives to have marks changed when they felt they were inappropriate. They agreed that they had more contact with teachers when using the eSchoolbag, although they reported disparity in the amount of help required by individual students to organize themselves.

Though they could and sometimes did e-mail teachers regarding homework, those who needed help with assignments while at home preferred to call on friends in the same class. The students admitted that this assistance with homework was at times abused, as students shared assignment answers on flash drives, and they acknowledged that this practice was not appropriate. Regarding help from family members in e-learning as compared to traditional homework, most reported no difference, although one student indicated that she received less help with her coursework for e-learning, as her mother did not like to work on the computer.

Interaction and community. Most students described feeling an integral part of the class group, welcome to participate, help each other, and share ideas, though this varied according to skill with English and academic confidence. Several students emphasized group work.

They reported helping others especially in the areas of technology, English medium, and course content. Some recalled feeling isolated when they fell behind the group's progress due to software or hardware problems.

Students appreciated the opportunities for communication made possible by the technology, but described the conflict between their enjoyment of communication for social purposes as opposed to the school's emphasis on communication for academic purposes. At school, they were able to connect only to the teacher or approved academic sites, which included conferencing and e-mail capabilities within the intranet. Several students expressed a desire to access MSN or other applications with which to communicate with friends outside the school-controlled framework, admittedly for social as well as academic purposes.

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Discussion

Al Wakrah Girls Independent Preparatory School is located in a small urban center just outside of Doha, the capital of Qatar, and is the only girls' Independent School in the town. Although the girls who attend the school are mainly Qatari or from other Arabic-speaking backgrounds, they have diverse family and socio-economic backgrounds. This diversity was apparent in their educational values, English-language ability, and use of technology. Those students who were conversant in English generally were able to participate more fully, were not discouraged by the challenges of e-learning, and seemed to appreciate the long-term benefits of the new skills they were required to learn.

Educational values. Traditional Arab education systems feature a school environment that is teacher-centered, in contrast to the student-centric nature of an e-learning community, where the teachers' role is to facilitate the learning of students, who display independence and initiative in pursuing their learning. At Al Wakrah School, rules and policies, teacher behaviors, and available support enabled those students who wished to embrace the e-learning experience to achieve success, within the limitations of their academic, linguistic, and domestic realities. This approach was not valued by some students, who felt more comfortable in an environment where they were simply told what to do by an authoritarian teacher. During the interviews, several participants contrasted those girls who were interested in learning and becoming independent, with or without technology, and those who preferred a highly structured classroom environment.

Collectivist tendencies were apparent, as students consistently referred to themselves as a group, using "we" and "the girls in my class" rather than "I" to describe experiences. They enjoyed the high level of communication and collaboration required by their studies, which suited their need for belonging. Some described their discomfort when problems or constraints of technology isolated them.

Throughout the study, students showed evidence of a gender-specific preference for community, social interdependence, collaboration, information sharing, and collective knowledge construction reported in various studies of females in e-learning (Farmer, 2008; Jaffe *et al.*, 1999; Müller, 2008). Their desire to use the technology as a social as well as academic tool supports Farmer's observation that females prefer to span formal and informal learning and communication. The use and enjoyment of multimedia and other communication tools parallel the observations of Romanov and Nevgi (2007) regarding females' online learning behaviors.

Technology. Some students came from families where one or both parents used computers for work or recreation, where students had their own personal computers, and were comfortable using them independently. These students were able to address school requirements and their own interests and needs via the technology. Conversely, those students who did not have computers or Internet connections, or academic and technological assistance from family members at home, were required to complete some assignments during their break time at school. Students who had their own computers at home did not feel a strong need to load games, music, or other software onto the school laptops, a practice that was frowned upon by the administration and many of the students themselves.

Conclusions and Recommendations

Motivation, belonging, and adjustment formed the essence of the e-learning experience for the students in this group. Despite a disparity of skills in academics, technology, and the English language, all participants described issues with each of these elements.

From the findings, the following recommendations may be drawn:

- E-learning design should recognize that, this being a society in transition, the two critical skills of technology and English language are not equally distributed among the population. Some environments are culturally conservative and have not embraced rapid changes taking place in the greater society, thus precluding the home as a source of supportive educational values and motivation.

- An appropriate level of English in all content, including enrichment, support, and outside Web resources, is necessary to ensure that all students have similar access to content and computer-based support.

- Introduction to e-learning strategies and skills in the school beginning in the primary grades might help students gain greater skill, confidence, and self-discipline with technology, and thus ease the transition to home use.

- Access to adequate hardware, software, and infrastructure, such as an effective wireless network in the school, would make the technology more transparent from the beginning and help build positive attitudes.

- Policies, procedures, and course design that are equitable for all and do not penalize those students who do not have computer or Internet access and support at home would promote a positive view of e-learning.

- The female preferences for communicative, collaborative, and supportive interaction need to be addressed in the design to avoid isolation.

This was a small exploratory study that set the groundwork for implementing e-learning in the Middle East. Broader studies that enlist participation of a greater range of students would ensure that there are no hidden issues related to the demographics of those who self-select. Because of the very different roles of males and females in Islamic societies, a similar study on the experiences of boys in e-learning would also be enlightening.

It is hoped that, by understanding the process learners undergo when encountering e-learning methods for the first time, policymakers and distance educators will be better equipped to tailor programs and approaches to the needs of Arab students and national development in the Gulf. □

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Active Learning Through Online Instruction

process shaped by the instructional technique "Six Thinking Hats"? Did you have any difficulty? How did you overcome difficulties?

2. How effectively did you adapt the "Six Thinking Hats" technique to the online environment? Do you have any suggestions about this topic?

3. What concerns did you have about the discussion process shaped by the instructional technique "Brainstorming"? Did you have any difficulty? How did you overcome difficulties?

4. How effectively did you adapt the "Brainstorming" technique to the online environment? Do you have any suggestions about this topic?

The content analysis was done inductively by two different researchers for all qualitative data, namely, students' perceptions and chat logs. For the content analysis, the stages of coding of the data, finding emerging themes, organization of codes and themes, and interpretation of the findings followed.

Research Findings

The experiences of students with the instructional technique "Six Thinking Hats." Of 20 students, eight had positive thoughts towards the process of discussion, whereas nine were negative. Among positive thoughts, the discussion process was found as valuable, functional, and pleasant by the students. One of the students said that "I liked the technique, and I think all my classmates liked it, too." Conversely, the discussion process was found to be hard, not useful, and tiring by the other students.

With regard to the organization of the chat environment, moderators preferred various ways of adaptation. All stated difficulties were solved with the help of moderators.

Thoughts and suggestions about adaptation of the instructional technique "Six Thinking Hats" to online environments. Of 20 students, 14 found the adaptation process of the implemented instructional technique to be successful, whereas six students found the process to be unsuccessful. Among the reasons why the adaptation was found to be unsuccessful were: adaptation was a hard task (three students), group members were not adequately prepared (two students), it was hard to get the hats on one-by-one (two students), and the technique was not properly understood by the group members (two students).

Students also provided some suggestions for effective adaptation. Two students stated that the moderator has the key role in successful implementation, two students declared that the number of group members should be increased (i.e., more than five members), and finally one student stated that this kind of discussion should be done through audio, not a textual medium.

The experiences of students with the instructional technique "Brainstorming." Of 20 students, eight had positive thoughts towards the process of discussion, whereas eight were negative. Among positive thoughts, the discussion process was found to be enjoyable, valuable, and successful. Conversely, some found the discussion process to be hard, not useful, and tiring.

Of 20, seven students stated that they faced no difficulties. On the other hand, three students said that they could not differentiate the technique from free discussion, and two students mentioned that some students could not focus on the topic during discussion. All the stated difficulties were solved with the help of moderators, as in the case of "Six Thinking Hats." One solution mentioned by the students to overcome difficulties was obeying the previously set rules strictly.

Thoughts and suggestions about adaptation of the instructional technique "Brainstorming" to online environments. Of 20 students, 15 found the adaptation process of the implemented instructional technique to be successful, whereas three students found the process to be unsuccessful, and two students declared that they found the adaptation process successful to some extent.

Students also provided some suggestions for effective adaptation of "Brainstorming" to online discussion environments. Two students stated that discussion topics that would address diverse ideas should be selected; two students stated that discussion rules should be declared in detail before starting the discussion; one student underlined the importance of the role of the moderator, and finally one student suggested discussion with audio support.

Analysis of the chat logs: "Six Thinking Hats." Of five groups, four used the instructional technique "Six Thinking Hats" efficiently. The moderator of the other group, which was not found to be successful, neither set the rules, nor facilitated the group using the "Six Thinking Hats" technique. Of five moderators, only two set the rules for discussion before starting. Moderators preferred different strategies in the adaptation process. Hence, one group was very strict about the rules and when and what to do, whereas the other three groups had a more "democratic" climate. The success of the adaptation of "Six Thinking Hats" to online environments results from the moderators' success in facilitation of the environment.

Analysis of the chat logs: "Brainstorming." Of five moderators, three set the rules for discussion before starting. Similarly, three groups gave a detailed explanation of the instructional techniques that would be used during the discussion. The moderators of only two groups wrapped-up the opinions of the members. Although all the groups generated enough original ideas during the discussion process, the ones that set the rules prior to discussion experienced a more effective process than the others. By obeying the rules, not only were the members not confused about when and how to talk, but also managing the process was

easier for the moderator. In general, the adaptation of "Brainstorming" was found to be successful by the researchers, except in the absence of wrap-up at the end of each discussion session.

Discussion and Conclusion

In this study, two instructional techniques for active learning were used by students and evaluated based on their experiences and perceptions during the process. All the groups discussed the given topic in a detailed manner and created meaningful ideas and examples whenever needed during the discussion. Moreover, students learned the topic, which was expected by their instructors, in a constructivist manner through collaboration. Thus, based on the research data and informal interviews, the researchers agreed that both of the techniques can successfully be used in online environments. This study revealed the main points that should be taken into consideration for more effective usage:

1. Before discussion, the moderator should set the rules which have to be followed during the discussion, should explain the procedure of using the instructional technique, and should carry out an informal chat session for gaining experience.
2. During discussion, the moderator should manage the environment, carefully observing the participants, and should resolve conflicts by providing practical solutions. The entire group should obey the rules strictly.
3. The moderator should summarize ideas whenever necessary, and minimally at the end of the discussion.

As seen above, the technical features of the environment and the chat tools used by students are enough to use the mentioned techniques. Hence, effective use is based mainly on the *management skills of the moderator* rather than the specific features of the online environment. As a conclusion, the adaptation of different discussion-based instructional techniques can be effectively done in online environments. □

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British Council, Work-Based Learning Research Centre and Islamic University Gaza E-learning Workshop: Five Years On

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This article describes the process for training Palestinians in Gaza on developing e-learning courses using WebCT. The training was delivered at a distance using information and communications technologies. The project used a problem-based approach to introduce e-learning concepts and practice for the pedagogy of online content, learning theory, and management.

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Introduction

In 2004 the Higher Education Academy eTutor of the year was awarded to us for our efforts in the British Council (BC)–Islamic University Gaza (IUG) e-learning workshop project.[1] The original purpose of the study was to go in-person to deliver a one-week face-to-face training session on developing WebCT courses. Our Middlesex University Risk Assessment Department denied permission for us to travel there, in view of unsettled political conditions on the ground in Gaza.

So, we explored some various options, from meeting 'in the middle' in Cyprus to conducting a totally distant learning workshop. In the end, a compromise was met, with a represetative of the British Council going over in-person to meet the delegates while we ran our workshop induction from London via our Web video conference (WVC) system, Macromedia Breeze (now Adobe Connect), and a landline phone for the audio. Our split-platform approach ensured that workshop sessions could continue by telephone with local hardcopy documentation even if the network connection dropped out.

Another variation in the workshop structure was the curriculum design. We were now able to spread the one-week session over a seven-week time frame. This allowed us to take a problem-based approach to introduce e-learning concepts and practice for the pedagogy of online content, learning theory, and management.

Induction

The Dean of the School of Lifelong Learning and Education at Middlesex University started the Web video induction event with some words of support and encouragement to all of us in the project. It was this powerful human side of the event that kept us all motivated to see it become a success.

The IUG delegate profile of 40 academics varied in knowledge domain (Humanities to hard Sciences) and their information and communications technologies (ICT) capabilities.[2] Mastery of the English language was also a factor. The solution we took was to have each delegate construct a personal learning agreement. This comprised an individual set of goals for designing and implementing their WebCT course based on their learning objectives, resources, activities, and assessment style.

These pedagogic goals steered what e-learning tools the IUG delegates would focus on during the workshop. On the induction day, each delegate introduced themselves to the tutors through the WVC system to establish rapport and personal bond.

With the individual goals in place, we needed to establish an evaluation criteria and strategy. The delegates decided elements such as usability, clarity of instruction, and appropriateness of the e-learning tools. A peer-review assessment model was approved, with the IUG delegates giving short presentations of their WebCT courses through the WVC system. Feedback was then posted on discussion boards by us, the tutors, and their peer-academics.

One task on the induction day was a mind mapping exercise using the white board on the WVC system. The Global Rich Picture (GRIP) technique[3] was used to identify the delegates' concerns and priorities. As issues emerged through the discussion, we would post labels in the GRIP diagram and draw lines to show relationships between the topics (see Figure 4 in the project report[4]). In this way we were able to identify an unexpected concern about the use of English. Since the WebCT courses would be used at IUG, Arabic was also accepted for the WebCT content.

Local Facilitator Model

We realized that a distributed support model was needed if we were to facilitate such a diverse group of academics through an e-learning system. With the tutors coordinating the workshop curriculum in London, we asked for 'local facilitators' for smaller sub-groups in Gaza (two Humanities and two Sciences). We recruited IUG staff members that were a bit more confident in using ICT and English who agreed to be sub-group moderators. While the London tutors would ask questions of the Gaza group, the local facilitators would speak into the Webcam to answer for the group.

Each week we would introduce new topics of e-learning curriculum to the project stakeholders to include in their WebCT learning areas. Motivation was very high in the group, and they added additional face-to-face sessions organized by them for peer-support. This 'team approach' with some groups was another unexpected outcome of the project, which helped contribute to the 100% completion of the Websites for the final project presentations.

Assessment

For the final assessment day, we arranged to have the IUG delegates go to the local British Council office to use their ISDN video conference system. Unfortunately, there was a block on the access, as all communication into the area was controlled externally. The need to adapt quickly became second nature to us in this project, both with the human and technical systems. We went back to our Web video conference and phone combination for the final assessed presentations from the British Council office. It was seen as a successful e-learning assessment strategy based on the 'critical friend' style comments posted by the IUG staff to each other in the WebCT

text discussion boards.

Recognition of successful completion was a concern for the IUG delegates. They wanted their efforts to go towards their continuing professional development (CPD). Work Based Learning at Middlesex University was able to provide certificates to acknowledge that the IUG staff had successfully met the project requirements, but more opportunities developed from the original project remit upon critical discussions. We brought the e-learning workshop curriculum to the university Accreditation Board for review. The project stakeholders were pleased to find that along with their certificates of completion we were able to assign Higher Education level credit to the project as well. This meant that the delegates would be able to apply their credit to any post-graduate study or towards a Master's degree at the Institute for Work Based Learning at Middlesex University.

The final award ceremony was held at the London British Council office for the UK members and the local British Council office for the Gaza participants via a video conference. The IUG vice-chancellor was present to recognize the achievement made in the project.

The project received media attention with coverage in various newspapers and magazines in Gaza. The Higher Education Research Opportunities (HERO)[5] stated that this project was an example of a successful e-learning project. Additionally, the project was presented at the annual ONLINE-EDUCA conference in Berlin in 2005. We received further recognition by being given the e-learning Network Special Mention Award in 2005 by e-Learning Age Magazine.[6]

Conclusion

Some of the lessons learned in this project were powerful and profound on a professional and personal level:

- *Flexible design.* We would not have been able to finish the project if we did not debrief and review the results of each weekly session. This flexibility can be summarized by our willingness to adjust to the needs of the Gaza delegates. In one instance they were unable to attend a workshop session due to their passage to IUG being blocked by military tanks! This had an emotional impact on us, which strengthened our commitment to make the project successful.
- *Back-up plans for technology.* Lengthy technical pre-testing was done to find out what ICT systems would work within the constraints of the technical/political infrastructures of the project. For each task and event that we scheduled, we planned for back-up systems in our project

strategy. This often meant that we were able to continue the program with minimum disruptions.

- *Human relations forged through the online systems.* The Web video induction/workshop sessions, follow-up text discussions, and project presentations gave us opportunities to deal with the delegates beyond the e-learning curriculum and establish relations with the IUG staff as individuals. Follow-up activity included the IUG link representative stopping in London to meet us on route to a research conference.

Reflections 5 Years On...

The pedagogic design principles that were developed from this project were applied to the Institute for Work Based Learning at Middlesex University. Here are some examples:

- *WVC for interviews, tutorials, and project presentation assessment.* Refinements in the pedagogic use of Web video conferencing from the IUG project have allowed us to integrate these system tools into student support and assessment policy and procedures.
- *Mind mapping built into the e-learning design.* WVC design now includes recording learners responding to pre-set questions to capture unexpected Q & A. This allows us to supplement pre-made voice-over PowerPoint lectures with samples of student interactions.
- *Project design* should factor in the opportunities to apply for e-learning awards with organizations such as the Higher Education Academy e-Tutor Award, e-learning Network, and the Association for Learning Technology (ALT) to get recognition in the e-learning industry.

This project, a blend of Work Based Learning and e-learning design,[7] has brought about some progressive applications of e-learning to help guide our organization to further innovations to support our distance learners. □

Notes

[1] *www.heacademy.ac.uk/hlst/news/detail/higher_education_academy_e-tutor_of_the_year*

[2] *www.elearning.mdx.ac.uk/research/IUGinduction_files/frame.htm*

[3] *www.elearning.mdx.ac.uk/research/GRIPinduction-v3_files/v3_document.htm*

[4] *www.elearning.mdx.ac.uk/research/BC-IUGfinalReport-v2.htm*

[5] *www.admin.hero.ac.uk/sites/hero/uk/research/index.cfm*

[6] *www.elearningage.co.uk/PREVIOUSAWARDS.ASPX*

[7] *www.elearning.mdx.ac.uk/research/FinalDProf4xternalsFiles/DProf4Externals-final.pdf*

Accounting for Cultural Preferences in the Design of Online Learning in the Arab World

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If cultural values affect the way that people learn, these should be accounted for in learning design. This article discusses innovative, pedagogically-sound design principles that were developed from theory and refined in an Arabic learning environment, in Oman. These principles are recommended for designing online learning that is culturally compatible with the learning preferences of the Arab world.

Introduction

Cultural values are generally considered to affect learning, but often these are not considered in the way courses are designed, and may be the main reason why people drop out of globally distributed online courses (Dunn & Marinetti, 2005; McLoughlin, 1999; Ziguras, 1999). Henderson (1996) states that the issue of culture in learning has received "little attention in the education technology and instructional design literature (p. 85)." Wild and Henderson (1997) also comment that there has been a lack of thought for "appropriate pedagogic design models" (p. 180) for learners of different cultural backgrounds learning in an online medium. The Australian Flexible Learning Framework's (2007) guide to developing culturally sensitive courses does not present any research beyond the 1990s, suggesting that little has been published recently. Thus, the lack of a practical response in the form of a design guide or model was identified, and the research reported herein sought to address this problem. This article discusses the findings from our research (Hall, 2009).*

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Developing Design Guidelines for the Arab World

A design solution was proposed from a synthesis of the literature, which was built on existing models and principles, and used a Design-Based Research approach (Design-Based Research Collective, 2003). The solution was explored through a theoretical application to a specific context at Sultan Qaboos University in Oman, and then tested iteratively to refine the design solution in a genuine context of use. These findings will be used to explain how online learning environments can be designed for Arabic cultural contexts.

Discussion of the Findings

Twenty three guidelines were developed from the empirical stage of research, as is shown in **Table 1**.

Table 1. Results showing guidelines for designing online learning environments in an Arabic context.

Designing the Tasks	
1.1	Use a learning-centered design, where the focus is on learners actively engaged in performing tasks.
1.2	Provide activities where learning is gained from peers or other sources, but also provide the direction and support from the teacher.
1.3	Design activities that are integral to the course structure, in that they help achieve the learning outcomes.
1.4	Design most tasks as group work, and give responsibilities to the group leader.
1.5	Design interaction as an integral part of course design, but participant commitment to the course and each other must be developed before interaction will occur.
1.6	Use both discussion forums and chat, but chat is the preferred option.
1.7	Base the collaborative work on learning issues if the goal is to develop deeper learning at the conceptual level, but commitment must be developed before this task can be successful.
1.8	Use separate roles or functions for some collaborative work, but commitment and responsibility must be developed before this can be done successfully.

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* Subsequent to the author's research in preparation of this article, *Educational Technology* published a special issue on culturally relevant learning environments (November–December, 2009).–Editors.

Table 1. Results showing guidelines for designing online learning environments in an Arabic context *(continued).*

Designing the Orientation	
2.1	Provide orientation for students in how to use discussion boards and chat in the context of use, from both a technical and educational perspective, and training as moderators.
2.2	Provide orientation to help learners understand the benefits of a learning-centered environment.
2.3	Provide examples or activities to help learners to understand a student-centered approach.
2.4	Provide orientation for learners on the style of communication used in online courses.
Designing the Development of the Learning Community During Orientation	
3.1	Provide initial classes face-to-face for learners who are not sufficiently experienced interacting online.
3.2	Design groups using participants' social networks or from people within a close circle.
3.3	Provide opportunities for participants to develop relationships and share personally in the initial part of the course.
3.4	Help learners to first be committed and accountable to others, as this can help them become responsible in completing the work.
Designing Tools to Scaffold Learning	
4.1	Use a variety of tools and support, including visual tools.
4.2	Design cognitive tools or scaffolds in a manner that helps learners to understand how to apply them.
Implementation: Teacher Responsibilities	
5.1	Develop the sense of commitment and responsibility where the frequency of interaction is low.
5.2	Use soft or spontaneous scaffolding through monitoring student learning.
5.3	Ensure that the tools are sufficient, suitable, and are being used. If not, then modify the tools or provide training, and focus on the learning benefits.
5.4	Build a sense of teacher immediacy through the use of individual messages.
5.5	Provide more support and scaffolding in the learning environment through e-mailed assignment due dates or calendar of deadlines.

Table 2. Summary of proposed cultural values and learning preferences for Arabic societies.

Cultural Values	Possible Learning Preferences
Collectivist	• Descriptive analyses may be preferred more than deductive analyses. • Items are understood in their context, not in isolation. • Commitment to others more than to own needs.
Oral Language	
Visual imagery	• Language should be used to develop rich mental images. • Other visual tools may be required.
Story-based	• Situated learning that is story-based or provides a vicarious experience may be preferred. • Use of metaphors may be valued in descriptions.
People-related	• Apprenticeships providing scaffolding and other people-based support may be preferred.

These guidelines were proposed from theory, then modified, based on an analysis of data from the research participants, and represent their learning preferences.

During the iterative phase of this research, design guideline modifications were made, based on learners' responses to the learning environment. The guidelines were analyzed for common concepts; for example, it was found that five of the guidelines focused on the need for commitment and responsibility, and three highlighted the importance of the visual element in learning. Most of the guidelines could be identified in at least one of several categories, which compare very strongly with the cultural values of the Arabic society (Nisbett *et al.*, 2001; Ong, 1982; Zaharna, 1995) that were identified in the theoretical stage of the research and as represented in ***Table 2***. That is, the refinements made to the guidelines show that the participants preferred to learn in an environment that supports collectivist values, provides visual and human-related tools, and in a situated context. These values had all been previously identified in the Arabic culture.

It is also important to note that many of the refinements were made to guidelines that had been proposed from general literature concerning online learning, and it was not at first realized that these guidelines carried cultural values. For example it is generally presumed that learners must interact online sufficiently to develop relationships (Wegerif, 1998). However, in the Arabic

context, it was found that relationships and responsibility to others must already be *built* before interaction would occur. This indicates that many concepts that are assumed to be necessary for effective online learning may instead be culturally-related concepts and may be important only for learners who value those particular concepts.

Social Aspects of Learning

Most of the modifications made to the design guidelines were related to the social aspects of learning. This strongly identifies in learners the preference to develop in the learning environment the type of relationships that are found within their own culture.

Some of these social preferences were also found as prerequisites to refine guidelines in other online learning categories. For example, it was found that unless commitment and responsibility were first developed, learners would not interact or collaborate, and therefore would not be able to complete course tasks. Therefore, this suggests that the learners' social preferences in learning may have significant impact on learning success. Others support the significance of the social preferences in learning; for example, Geer's (2001) research found that social preferences and expectations are important in culturally sensitive online environments. In McLoughlin's (1999) work with indigenous Australians, she used an approach that promoted learning through the social environment as a means for learners to develop a sense of community and to use its skills to create a "unified and authentic environment" (p. 237). Thus, most changes in the learning design were identified as cultural, and cultural preferences may be found in more aspects of online learning than previously presumed. This shows that the impact of culture on learning is significant.

Design Guidelines and Cultural Values

As previously stated, the modified design guidelines are strongly aligned with the cultural values of the learners in this context. This shows that these guidelines can express learners' cultural values, which may then be applied to the learning design. For example, Guidelines 2.1, 4.2, and 5.1 describe how learning should be designed to provide more support in the learning environment, as it was found that the research participants preferred this type of support. These characteristics are described as characteristics of a collectivist culture, which is common in the Arabic society. Guidelines 1.6, 5.4, and 5.5 state that chats, teacher immediacy, and spontaneous scaffolding should be designed into the learning environment. These design factors simulate a face-to-face characteristic in the learning environment. This characteristic can be identified as an Arabic cultural value, as is shown in ***Table 2***. This culture values face-to-face relationships, as they prefer activities that are human-related and not impersonal.

It can be concluded that the refined guidelines reflect the cultural values of the learners' Arabic background, and we can apply them to the learning design, thereby providing a solution on designing courses that consider cultural values of the learner.

Conclusion

This research has developed guidelines for the design of online learning environments for learners of an Arabic cultural background. The guidelines link culture, theory, and learning design. These guidelines have been tested and refined in an authentic Arabic learning environment, and they are based on the preferences of these learners and reflect the cultural values of the learners' Arabic cultural background. This demonstrates the ability of the guidelines to account for learners' cultural preferences, to be used in the design of learning for Arabic cultural contexts.

It was also found that most modifications made to the guidelines were identified as cultural, and that cultural preferences may be found in more aspects of online learning than was previously presumed. This means that the impact of culture on learning is significant, and designs that consider cultural preferences are crucial in order for learners to have a successful experience. □

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The Impact of Assistive Technologies on the Reading Outcomes of College Students with Dyslexia

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This article describes a study to determine whether assistive technology, specifically text-to-speech software, can be used to help students with dyslexia cope with academic texts in English. Results from the study indicated that the text-to-speech software enhances students' immediate and long-term academic reading performances.

Introduction

The ability to read texts in English constitutes one of the criteria for acceptance to higher education in Israel. Being able to comprehend and cope with these texts underlies success or failure in obtaining a degree. Thus, Israeli universities and colleges require students to read academic texts in English. However, the universities

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report that most students are unable initially to meet this demand, and thus are required to take a course which focuses on English language reading comprehension.

The rationale underlying EAP, English for Academic Purposes, courses is that English reading proficiency is an essential across-the-disciplines tool that can facilitate a student's academic studies and later professional career.

The great majority of students cope with the task, but those students who have dyslexia find themselves failing time and time again and see the task of reading as overwhelming. Since such students cannot be denied full and equal access to educational opportunities, we decided to research the use of Assistive Technology to find out whether we could help them read and meet the requirements.

Research on Assistive Technology and Learning Disabilities

The use of technology has been shown to be effective in a wide range of content areas (Ashton, 2005; Edyburn, 2004; Okolo, Cavalier, Ferretti, & MacArthur, 2000). Research says that use of Assistive Technology (AT) can contribute to strengthening students' skills in decoding, comprehension, and reading with fluency (Elkind, Cohen, & Murray, 1993; Higgins & Raskind, 2000), word recognition, reading comprehension, spelling, and reading strategies (Raskind & Higgins, 1999), spelling (Dalton, Winbury, & Morocco, 1990), organizing, reading, and synthesizing information (Anderson, Inman, Knox-Quinn, & Homey, 1996; Anderson, Inman, Knox-Quinn, & Szymanski, 1999), proofreading (Raskind & Higgins, 1999), and writing (Raskind & Higgins, 1995). AT has proved effective in assisting LD students perform better and more accurately, gain knowledge and confidence, and gain independence in performing tasks.

In order to establish who our subjects were, we start by defining dyslexia followed by a definition of assistive technology.

Dyslexia is a difficulty in the acquisition of literacy skills that is neurological in origin. It is evident when accurate and fluent word reading, spelling, and writing develop very incompletely, or with great difficulty (Siegel & Smythe, 2004).

Within the context of our study, we would like to emphasize 'literacy skills' which include comprehension and not only word recognition and decoding.

Students who have dyslexia often find reading texts extremely difficult in the L1, their mother tongue/first language, and almost, if not, impossible in English as a foreign language. Our goal has been to provide these students who have been diagnosed as having dyslexia and other language-related difficulties with the possibility of learning to read fluently and cope with the texts to achieve reading fluency and to succeed academically.

Table 1. Matching AT to students' specific needs.

Specific Need	Assistive Technology
Decoding (sounding out words) Reading comprehension	Text-to-speech programs
Handwriting Directionality	Speech-to-text programs
Expressing words in written form	Word processors Word prediction programs
Encoding (spelling)	Proofreading programs Spell checkers
Organization	Outlining/brainstorming programs

Table 2. AT according to types of difficulty/impairment.

Type of Difficulty	AT to Consider	Internet Site
Reading	ReadPlease Natural Reader TextAloud TextAssist Kurzweil	www.readplease.com www.naturalreader.com www.textaloud.com www.textassist.com www.kurzweiledu.com
Writing	DragonNaturally Speaking Intellitalk	www.nuance.com/naturally speaking www.intellitools.com
Planning and Organization	Inspiration	www.inspiration.com
Spelling and Word Prediction	WordQ Predictor Pro	www.wordq.com www.reading madeez.com/ products/Predictor Pro.html

Assistive Technology (AT) in this context covers a wide range of software which helps students read, write, organize information, and spell. **Table 1** and **Table 2** present the way AT can be used to assist specific needs and show examples of various existing software products.

Aim of the Study

The investigation was designed to validate the competency of assistive technology to solve the problem of students at-risk, namely students with language-related difficulties and dyslexia. Our main aims were:

1. To evaluate the effectiveness of two text-to-speech programs (**ReadPlease** and **TextAloud**) in assisting our LD students to read academic texts in English.
2. To confirm our initial assumption that the use of the programs helps and motivates students to read longer texts in English.

The specific question that is relevant to this study is: Are there differences in the average grades of the dyslexic students who studied in a computer lab and used the text-to-speech software? The results were measured at different stages of their learning: at the end of the first semester, stage 1; at the end of the second semester, stage 2; and the end of the third semester, stage 3.

Method

Subjects. The participants in the intervention study were recruited from the students at the College of Education; only those students who had an educational assessment and were diagnosed as having dyslexia were included. Initially all students who had been assessed as having dyslexia were tested and classified into levels according to the Psychometric cut-offs: Level 1 were those students with a grade of 85–99; Level 2 were those with a grade of 100–119; and Level 3 were those with a grade of 120–130. As the focus of this study is on being able to validate the competency of AT in helping these students, we selected 10 students who met the criteria for level one or below. Fourteen students met the above criterion, although only 10 students completed all three semesters of the intervention program.

Intervention Study. Our intervention study was a three-semester intervention study. Each semester presented the students with a different level: semester one–level one, semester two–level two, and semester three–level three. The three-semester intervention was based on a pretest-posttest design. The students in the study had a history of failure, many of whom had given up and had to be convinced to take part in the study.

Materials. The texts studied in the first semester, namely, Level 1, were at beginner level. These texts were short (1500 words) with simple sentences and basic lexical items. The texts in the second semester, Level 2, at the intermediate level, were longer (2000 words), with more sophisticated vocabulary and syntactic complexity. The texts used in the third semester, Level 3 (2600 words) targeted the advanced level. Success at this level was the goal of the study. The focus of the course is on processing and understanding the details of an academic text in order to construct its more global meaning.

The independent variable was computer-based reading software, and the dependent variables were reading comprehension skills, attitude toward reading, and AT. Each student worked with an individual computer and was provided with headphones. A hardcopy of the text plus questions was handed out by
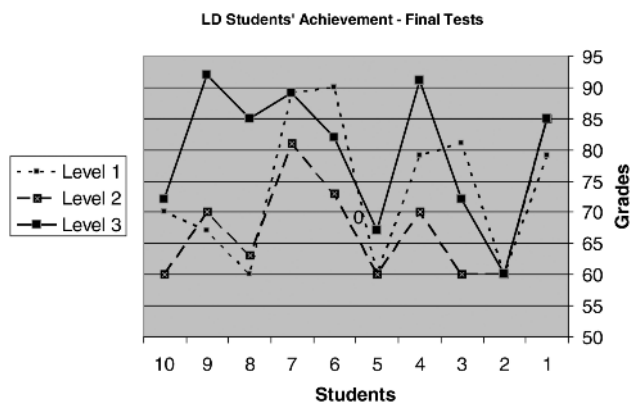
Figure 1. Grades obtained by the students in each level final test.

Table 3. Students' grades over the three-semester period.

Grades Final Exam	60–70	70–80	80–90	90–100	Grade Average
First Semester (Level 1)	4 students	3 students	2 students	1 student	73.5
Second Semester (Level 2)	5 students	3 students	2 students		68.2
Third Semester (Level 3)	2 students	2 students	4 students	2 students	79.5

Table 4. Means and Standard Deviation of grades in English at the end of the three semesters.

Time of Measurement	N	M	SD	F
End of First Semester (Level 1)	10	74.00	11.22	8.11**
End of Second Semester (Level 2)	10	67.91	8.84	
End of Third Semester (Level 3)	10	79.50	10.46	

** $p < 0.01$

the teacher. According to the reading strategy, which was most suited to each individual, the students listened to the text and questions of the article and then answered the questions on paper.

Our first choice for **text-to-speech software** was **ReadPlease**, which can read digital text aloud, highlight text as it reads, allow the reading rate and font size to be adjusted, and provide options for voice type. Its advantage is that the simpler version (**ReadPlease 2003**) can be freely downloaded from the Internet site. Our LD students could use it to do homework. At the college, the students worked with the improved version of the software, **ReadPlease Plus 2003**, which offers more freedom for moving through the text. Most of the students were satisfied with the performance of the software, though some students complained about the quality of the artificial voices. The solution was **TextAloud**, which has more human-like voices. Our students found these voices satisfactory.

Results

At the end of each semester, the LD students graduated a study level after passing a final test. The passing grade is 60. Data were collected between January 2007 and January 2008. The comparison between the first (January 2007), second (June 2007), and the last test (January 2008) is shown in **Figure 1**. Despite the graded difficulty of the texts, the students' grades got better, showing that their reading rate, fluency, and comprehension improved. The graph presents the LD students' improvement in reading texts in English.

When we analyze the graph, we have to take into consideration the fact that in each semester the students had to deal with texts of different levels of difficulty. Looking at the grades obtained by the students at the end of each level, we can see how these LD students have improved their reading comprehension over the years. The grades are more explicitly presented in **Table 3** and **Table 4**.

Looking at the results of the students' achievement,

we notice that the range of grades obtained in the final exam of the second level of study was almost the same as the grades obtained in the previous one, even if the level of difficulty of the studied texts was higher. The class average (68.2) is lower, given the increased difficulty of the texts. The most conclusive result is that representing the scores of the LD students in the final test of the EAP course, at the end of the third semester. Though the grades range was between 60 and 90, this time only two students got grades below 70, two students got grades between 70 and 80, four students got between 80 and 90, and two students' grades were over 90. The class average (79.5) is the highest.

A further analysis, a one-way analysis of variance with repeated measures, was used to examine the research question. The ANOVA showed that there were significant differences between the means ($F(1,10) = 8.11$, $p < .01$). We then followed this up with a Bonferroni t-test and found that the source of the significant difference is the difference between the second measures at the end of the second phase of

the intervention and the third measurement that was carried out at the end of the third intervention program.

The results in *Table 4* point to the fact that the means of the grades at the end of the first semester are similar to the grades at the end of the second semester, and the means of the grades at the end of the first semester are similar to the grades at the end of the third semester. However, the means of the grades at the end of the second semester are different from the means at the end of the third semester. This is the source of significance. The intermediate level seems to be the crucial point in intervention for moving the students along the continuum. The jump between Level 1 and 2 is more dramatic than the one between Levels 2 and 3. Despite the length and difficulty of Level 3 texts, the students attained the expected level. They had been exposed to texts, worked with them, and became adept at reading comprehension, with the AT being a crucial tool to help them bypass their reading disability.

Discussion and Conclusion

In evaluating their motivation and success, 96% of the students who completed our feedback questionnaire were satisfied with the performance of *TextAloud*. They found the use of this software more user-friendly and more effective than the use of cassettes/CDs they had previously used in order to listen to the texts. All the students admitted that the use of AT improved their reading ability in English.

The use of *TextAloud* helped the students with dyslexia to:

- decode/read texts in English by significantly gaining in word recognition and reading comprehension;
- improve their reading fluency;
- learn, apply, develop, maintain, and generalize new reading strategies;
- become motivated to read in English;
- increase their level of participation in class or home assignments;
- achieve better grades;
- be better prepared to read articles in their individual field of study; and
- increase self-esteem.

What made the difference? Was it the actual technology? Was it differentiated instruction? We think that the combination of frontal teaching, differentiated instruction, and the use of AT can help students with learning disabilities achieve the goals of the EAP course.

We strongly believe that the use of text-to-speech software has great potential for improving not only the reading level of students but also in providing additional benefits, namely, confidence to grapple with texts and a more positive self-esteem. The limitations of the study are the small number of participants. Further research is needed to quantify these conclusions. ☐

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Websites:

www.resourceroom.net/readspell/ida_texttospeech_Elkind.asp
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www.textaloud.com
www.ldonline.com

Meeting Diverse Learner Needs with Blended Learning

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This article describes a 40-week Computer, Research Skills, and Projects (CRSP) blended learning course designed and implemented at Dubai Men's College. The learning employed a design using socio-constructivist principles in the blended approach to cater to the learning preferences of students.

Meeting Diverse Learner Needs with Blended Learning

Employers and communities are seeking graduates who can use creative problem-solving and critical-thinking skills (Kuh, 2009). However, many freshman students

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worldwide, regardless of differences in culture and education background (Guthrie, 2001), do not possess the necessary academic literacy, thinking, ICT, language, and numeracy skills for them to fulfil these expectations (Hall, 1996).

This article details a research study that was conducted during the piloting and subsequent implementation of the 40-week Computer, Research Skills, and Projects (CRSP) program. CRSP was designed for Higher Diploma Foundations (HDF) students at Dubai Men's College (DMC) using a blended approach to meet diverse learner needs, while also supporting the transition to a tertiary academic culture. Prior to referring to findings and implications of the research study, several key features of the CRSP program are reviewed.

Learning Preferences at DMC

DMC is an English-medium tertiary institution that offers a selection of career-oriented and vocational programs (such as media studies, business, IT, aviation, and engineering), ranging from certificates to Bachelors' qualifications. Students at DMC are all Emirati males, and approximately 70% are between the ages of 17 and 20. They enter Foundations-year with a low-intermediate level of English proficiency and often come from a strongly teacher-centered learning environment, which involves acquisition of factual knowledge through rote-learning and memorization (Zimmerman, 1990).

In 2002, a study was conducted with 438 Foundations students to identify their learning preferences using the VARK online survey (Hatherley-Greene, 2003). The belief that Emirati learners are strongly auditory or visual was challenged because the majority (63%) of participants expressed a preference for multi-modal approaches. Comparison also revealed that there was a greater preference for multimodal and aural modalities than indicated in Fleming's (2007a,b) study, while there was less preference for kinaesthetic and visual modalities, and equal preference for read/write.

CRSP Research Study

Existing research performed in tertiary level institutions to measure the effectiveness of blended learning,* framed by socio-constructivist principles, is limited, sometimes dated, and is not particularly generalizable to DMC. A requirement to review the existing HDF program was identified, and an associated study conducted that aimed to investigate the effectiveness of CRSP, as well as providing data that enabled continuous evaluation and improvement. The sections below describe the design, facilitation, and assessment of CRSP, and then discuss results and implications of the research study.

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* Flexible or hybrid learning, combining face-to-face learning with e-learning.
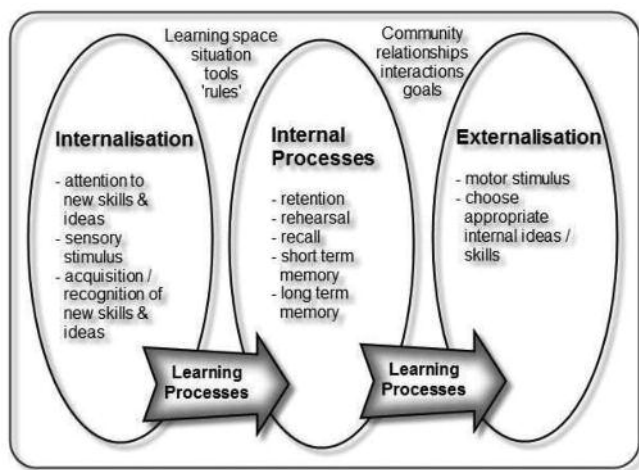
Figure 1. A simple model of learning processes (adapted from Passey, 1999).

Figure 2. CRSP semester 1 WebCT homepage.

CRSP Program

Wirth (2007) indicates that learning alters the physical structure of a brain, coordinates, structures, and regroups connections and networks of related concepts, and suggests that disparate sections of a learner's brain are ready for learning at varying stages. Learning without thinking, such as rote learning, does not promote the construction of conceptual frameworks, nor does it include the use of active thinking skills, such as reasoning, questioning, analysis, conceptualization, creativity, comparison, communication, and interpretation (Murchú & Muirhead, 2005). Socio-constructivists, furthermore, assert that learning is also contingent upon context, with learning environments affecting how knowledge is constructed (Kozma, 1991).

Blended learning design (when underpinned by socio-constructivist principles) has the potential to foster a scaffolded, supported, discovery approach (see *Figure 1*) that suits a range of learning preferences (Lemke, 1997) especially when used collaboratively (Semones, 2001). Thus, faculty designed and implemented an interdisciplinary blended learning program that created a dynamic interrelationship between the four main Foundations programs, while attempting to cater to learning preferences.

The resultant CRSP program required students to complete, over the 40-week academic year, a series of assessed and non-assessed tasks set within four key projects: The Country Project, The Famous Person Project, The Career Project, and The Inventions, Developments, and Change Project. Students, through a cumulative process, produced one main artifact per project. Costa and Kallick (2001) suggest that "when we put...[a skill] into context we can assess how a student applies...[it] when a situation or task requires its use" (p. 518). As such, it was important not to focus on cognitive operations in isolation, but to observe their application. Project tasks therefore included off-campus community-based undertakings, as well as integrated discipline-specific activities that encouraged critical thinking and decision analysis (Tanisli & Saglam, 2006). The projects recycled processes, giving students numerous, risk-free opportunities to apply concepts and skills.
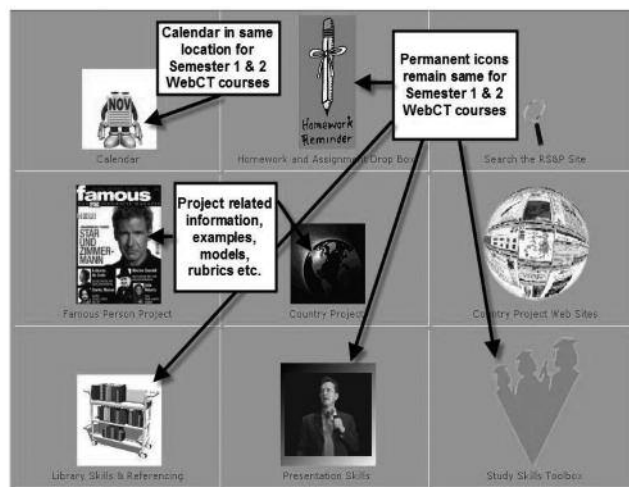
Guided by the learning preferences of Foundations students at DMC, CRSP provided extensive support for learners by utilizing face-to-face sessions, alongside a series of tools, documents, audio and video files, models, explanations, instructions, learning outcomes, and rubrics, hosted in the Learning Management System (LMS), WebCT (see *Figure 2*). More detailed descriptions of the design and facilitation of CRSP are provided in the following sections.

Cultural and Social Considerations

The CRSP program was designed to be relevant to and culturally responsive to Emirati learners. For instance, social issues were addressed through two key topics—Emiratization and careers in the UAE—where the Career Project gave students opportunities to interview significant business figures (both male and female), and to develop ePortfolios.

Facilitation

Facilitation of all projects comprised five hours per week of face-to-face sessions, supported by further synchronous and asynchronous interactions. At the beginning of an academic year, face-to-face sessions were relatively teacher-centered. However, as the year progressed and students became more comfortable with a learner-centered approach, two hours of the face-to-face sessions were offered as tutorials. In the final weeks of the fourth project, the tutorials were

made optional. Academic faculty teaching CRSP also tested the effectiveness of team-teaching with combined classes of 60 to 80 students in a session facilitated simultaneously by two or three faculty. Given the scaffolded nature of the blended program, it was found that students were able to access everything they needed to complete a task in a self-directed manner. Those students, however, who encountered difficulties or wished to explore a complex concept or skill further were able to seek immediate assistance.

Resources and Tools

The blended design was formulated to provide rich, scaffolded, problem and active learning spaces (Jonassen, 1995). Participants were encouraged to complete individual and collaborative tasks hosted in chat (MSN and Skype), wikis, and discussion forums. Web 2.0 sites and tools were often blocked without warning by Etisalat (the telecommunications provider in Dubai), therefore restricting the choice of 'spaces' used in CRSP. Students were nevertheless provided with:

1. Choices of where, how, and when to study and tools to use.
2. A 'one stop shop' to access tasks, tools, and resources suitable for visual, aural, read/write, kinaesthetic, and multimodal learners.
3. Access to information, learning objects (LOs), and activities for the whole year, including rubrics and assessment criteria.

Examples and models were used extensively to provide a clear indication of possible final artifacts and intervening stages (Krajcik, Blumenfeld, Marx, & Soloway, 1998). For example, in semester one, students were provided with a model, examples of previous student presentations, and a video that illustrated key concepts and phases of a formal presentation.

Assessment

Ramsden (1992) argues that assessment is about measuring student learning and diagnosing specific misunderstandings to help students to learn more effectively. Thus, CRSP, rather than relying on standardized tests which focus on skills in isolation, used ongoing formative assessment with regular, timely feedback (Krajcik *et al.*, 1998). Reflection and peer collaboration were also encouraged. Minimal weighting of assessment grades in semester one meant that students had a chance to use skills and strategies acquired, and evaluate and re-use them, with little effect on their final grades.

Data Collection

Data were collected in the 2003–2004 (189 participants), 2004–2005 (199 participants), 2005–2006 (201 participants) academic years, and semester one of 2006–2007 (221 participants), using a variety of qualitative and quantitative data-collection methods, including interviews, focus groups, surveys, statistics from WebCT, assessments, and documents associated with the CRSP program. Study participants were students, supervisors, faculty, and community members. The quantity of data is substantial and thorough reporting of the results is outside of the scope of this article. As such, a brief discussion of key results and their implications is provided.

Results and Implications

Findings correspond to those of similar research studies whereby "student achievement is at least as high, and often higher, [than]…in traditional classrooms" (Bossert, 1988–1989, p. 225). The CRSP program was piloted at DMC in the 2003–2004 academic year (graduating in 2004). The pilot year was successful because, even though the failure rate increased from the previous academic year, there was a significant increase in achievement of A and B grades. This trend continued except for the 2005–2006 year, where the failure rate increased, in both CRSP and other disciplines. CRSP nevertheless still graduated 80% of students, with 49% achieving either an A or B grade. These factors suggest that blended strategies and scaffolding are effective in extending more advanced students by keeping them interested and motivated throughout the academic year, while also supporting students who found the HDF program challenging.

Findings also show that students felt empowered by the blended design, although technical issues were an ongoing concern. Overall, students were enthusiastic about CRSP, enjoying the freedom of choice, flexibility, and the chance to practice a range of skills and strategies collaboratively. They appreciated the range of tools provided. Furthermore, students were motivated by the opportunities to complete tasks without reliance on a teacher.

The chance to 'chat' with teachers and other classmates was successful in enhancing the learning community. Students were encouraged to participate in a non-threatening environment, including those who did not like to contribute in face-to-face discussions (Bennett & Pilkington, 2001). Peers and teachers became more accessible, and when project deadlines approached, there was less sense of isolation. The benefits of chat over phone communication were that the writing process forced clarity of expression, and chats could be archived for later reference.

Faculty feedback identified some central factors, such as the increased engagement and motivation of students, and noted that high expectations appeared to encourage students to produce higher quality work. Furthermore, it was indicated that students who gradu-

ated from the program were noticeably more able to meet Higher Diploma program-specific requirements.

Conclusion

This article has described the blended CRSP program that was designed for Emirati students to meet their learning preferences and needs as learners, with emphasis placed on the learning experience itself as well as the aims of the curriculum. CRSP attempted to faciliate effective learning by fostering group work, peer and community interactions, and the use of synchronous and asynchronous communication alongside face-to-face sessions to scaffold four interdisciplinary projects. The results of the associated research study imply that students perceived the skills relevant, and found the blended learning approach beneficial. In addition, they valued the high level of support, transparency, and variety of formats of the resources and tools.

Fully-integrated, blended programs have the flexibility to be used in a variety of educational settings where learners need to acquire or enhance thinking, research, study, interpersonal, and ICT skills. By themselves, however, the ICT tools achieve nothing, and it is the design and facilitation of programs, and ongoing evaluation, that will provide engaging learning experiences, while offering sufficient support for the challenging transition into tertiary education. □

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An Integrated Learning Management System for Islamic Studies: An Innovation from Jordan

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The use of ICT in the Middle East is expanding at a fast rate; hence managers and decision-makers must decide on the best learning solution for their organizations. This article describes how a small team of individuals in Jordan developed an effective learning solution to a social problem. This may provide some useful lessons for other organizations which would like to start using e-learning or are using e-learning but are facing financial constraints.

Introduction

The adoption of ICT in the Middle East is growing. In Dubai, for example, there was a growth of 26% in the e-learning market in 2008.[1] Throughout these areas, indeed across all similarly developing regions, minimal budgets and resources have limited the impact of this growth. While the ICT and e-learning landscape is flooded with a wide array of open-source and commercial technology solutions, e-learning managers in some countries in the Middle East have the difficulty of selecting the right learning solution given their limited budgets. Not only do many of the existing systems (90+ Learning Management Systems according to one study[2]) have similar features and tools, but selecting

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one system does not necessarily mean that all of one's needs have been fulfilled.

This article describes how a small team of individuals in Jordan, with a limited budget and resources, developed an effective learning solution to a social problem. This may provide some useful lessons for other organizations which would like to start using e-learning or are using e-learning but are facing similar constraints.

The Learning Need

Post-September 11, 2001, Muslim organizations in North America and Europe were struggling to provide a truthful picture of Islam to world society at large. Also, many non-Muslims were interested in learning about Islam. In December 2002, a small group of individuals, scattered across several locations (US, Jordan, and Canada), collaborated to find a solution. To them, the need was clear. A large portion of the Muslims around the world did not have a proper understanding of their religion. One of the main reasons was the fact that the majority of qualified scholars have remained in the Middle East, North Africa, and the Indian subcontinent, while Muslims have migrated in masses to many diverse locations on the planet. This gap between the Muslim scholarly tradition and what Muslims actually knew was problematic. The question was: How do we close the gap by connecting scholars with students effectively?

The small group of individuals consisted of a teacher of the Islamic sciences in Jordan and IT and e-learning professionals in the US and Canada. After several months of discussion, the team decided to provide a complete online solution that would connect the teacher in Jordan to any Muslim wanting to gain Islamic knowledge anywhere around the world. The rationale for a complete online solution rather than a blended online and face-to face-model[3] was based on an audience analysis that most students were working professionals and university students. This target demographic would find it extremely difficult to travel even for a short period of time. Furthermore, financial resources were not available for the teacher to travel outside of Jordan. The only funds available to the organization were voluntary donations.

Connecting Scholars to Students: Anytime, Anywhere

After several months of providing an online service for answering religious questions combined with a searchable knowledgebase, the following factors played out well for the organization:

1. The main teacher was well-versed with using Internet technologies. This was especially important as he did not have access to technical support in Jordan.

2. The team included people with experience in instructional design and Web development.
3. Valuable information about the learning needs of the audience was obtained during the offering of the online question and answer service. The experience confirmed that the audience strongly needed structured teaching and learning that followed the model of traditional face-to-face teaching of Islamic sciences.

In October 2003, the organization started an online Islamic academy.[4] In order to be as close as possible to the model of traditional Islamic teaching, the following were identified as key elements of the model:

- teacher presence—the ability for the students to be able to have live interaction with the teacher;
- structured curriculum and content based on traditional texts that have been used for almost a thousand years; and
- attitudinal changes in students being among high-level program goals—for example, instilling in the students the ability to discern situations when they can answer questions of others and when they need to consult with a scholar.

In line with this model, a blended, self-paced, and live, collaborative learning model[5] was developed: pre-recorded multimedia lessons with weekly live question and answer sessions using live audio/video with text chat. This gave rise to three core technology needs:

1. A way to enable students to register and pay for courses online. The organization picked a relatively inexpensive off-the shelf system for registration and payments. One of the key choices was to choose a system that could be customized by internal developers.
2. A Learning Management System (LMS) that would allow not only the content to be delivered in a structured fashion to the students but also enable live communication with the ability to see and interact with the teacher. There were no LMS at the time that included a live virtual classroom, and commercial LMS that were available were not acquired because of budget constraints. Therefore, the organization chose a widely-used open-source LMS system[6] and internal developers built a fairly functional one-to-many live audio with text chat system that could be integrated with the LMS so that users could log-in seamlessly into the virtual classroom from the LMS.
3. Multimedia lessons were initially provided as audio recordings uploaded on a weekly basis before the live virtual classroom and were eventually turned into audio with synchronized text through a custom-built application. The text was developed by teaching assistants in order to focus learning.

The ability to customize the registration system and the LMS proved to be extremely valuable. In the following years, as more students enrolled for courses, and the Academy was able to attract more teachers, the small team of developers and designers was able to customize the registration system to follow the same look and feel as the main Website as well as enable a centralized log-in between the registration and the LMS.

Key Challenge: Fast Pace of Change in E-learning Technologies

Over a span of six years (2003–2009), the online Islamic academy grew from 50–100 students every semester to 800–900. The size of the faculty has also grown from 1 to 14. The road, however, was not without difficulties. In terms of technologies, the main challenge has been finding the balance between internal development, adoption of external systems, and customization of existing systems. For example, with regards to the live virtual classroom, many strong systems have matured over the years, such as Adobe Connect,[7] Elluminate,[8] and DimDim.[9] While the commercial products were still out of reach financially, an open-source system like DimDim could have been adopted.

However, after talking with e-learning experts, who helped identify the instructional model and teaching strategies, the direction of technology was kept in line with the learning needs. As teacher presence was an important factor, and the audience was scattered over different time zones, the recording of live sessions was an important factor for students who could not attend the live virtual classes. DimDim's recordings at this point provide only the audio/video portion of the virtual classes, but the complete interaction was necessary to keep the authenticity of the classes.

Consequently, based on a literature review conducted by the team on use of multimedia in learning,[10] the custom-built virtual system was improved to include the video of the teacher and presentation of PowerPoint slides, thereby enabling more teacher presence. The recordings of live virtual classes were automated to appear within 24 hours of the class and include the complete interaction experience with full synchronization of audio/video with chat, slides, whiteboard, and student audio. Furthermore, the pre-recorded lessons were enhanced to include synchronized slides and whiteboard, and relatively inexpensive new products that came on the market were explored (for example, Camtasia[11] and Articulate[12]).

One of the key lessons learned from this experience was the importance of keeping in touch with the latest developments in the landscape of e-learning technologies and not to be "attached" to or "sold" on one system or vendor.

A Replicable Model for Small to Medium-Size Organizations

Current State of the System

The Integrated Learning Management (ILM) system that was developed and improved in response to the needs of the students currently consists of the following components:

(1) course catalog, registration, and payment;
(2) Learning Management System;
(3) live Virtual Classroom with post-session synchronized multimedia recordings; and
(4) pre-recorded multimedia lessons.

The uniqueness of these components lies in the fact that they use different systems (some open source, some commercial, and some custom built in-house) that have been integrated seamlessly using an Application Programming Interface (API)[13] model.

Expansion and Future Plans

As the needs of the organization are growing into areas such as blended online and face-to-face, offering of complete programs and curricula, as well as partnerships with other educational organizations, the following components are being planned:

(1) program management including grade management across courses;
(2) central repository of resources to allow for post course review and preparation for program level testing and certification; and
(3) a student-centered interface that is common across all systems and is focused on usability and ease of use.

It is expected that the ILM system will be completed in 2010 and have the ability to be customized to fulfill the needs of other organizations in addition to those of the online Islamic academy.

Recommendations

If organizations are contemplating delving into e-learning or are currently struggling with existing infrastructure, below are some guidelines that could be valuable:

1. Follow a proven and well-accepted instructional design model. Ideally consult with an instructional designer at the initial stages and during major changes in the direction of learning or e-learning technologies.
2. Invest in technology systems (whether commercial or open source) that can be customized to exchange bi-directional information with other systems and be custom branded. It would also be highly beneficial to have developers who have expertise in the developmental technology that was used to build the acquired system. When selecting open-source systems, look at the maturity of the system and its adoption rate.
3. When deciding to go down the road of building systems in-house or customizing an existing system, do a cost-benefit analysis of costs involved with in-house customization and development versus maintenance and license fees. Consider creating a blueprint for technology usage and cost models for information and communication technology (ICT) decision-making that are based on technology roadmaps.[14]

Conclusion

The 2009 EDUCAUSE study[15] identifies "Funding IT" as the number one issue across universities in North America. With a backdrop of the increased sophistication of Web technologies to include social networking, virtual environments, and Web-enabled mobile devices, there is a potential conflict between the increasing potential of the use of ICT in learning and lack of funding for information technology (IT). The most important factor remains, as this article has shown, that embarking on ICT and e-learning must follow a clear need, be it social, educational, or business, rather than the following of a technology trend. The recommendations presented in this article apply mainly to organizations with limited budgets and resources. However, the model is expandable to support a large number of students, as long as the hardware infrastructure can be scaled up. □

Notes

1 UAE's e-learning market grows by 26 percent to reach USD 72.6 million by 2010: *http://www.entrepreneur.com/trade journals/article/173420218.html* .
2 LMS Knowledgebase 2009: *http://www.brandon-hall.com/publications/lmskb/lmskb_firms.shtml* .
3 Blended Learning—What is it and where might it take us: *http://www.aln.org/publications/view/v2n1/blended1.htm* .
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5 Building effective blended learning programs; H. Singh; *Educational Technology,* Nov.–Dec. 2003, Vol. 43, Number 6, 51-54.
6 *Moodle: http://www.moodle.org* .
7 Adobe Connect Pro: *http://www.adobe.com/products/acrobat connectpro/* .
8 Elluminate Live: *http://www.elluminate.com/products/live/index.jsp* .
9 DimDim Virtual Classroom: *http://www.dimdim.com/products/dimdim-virtual-classroom.html* .
10 Multimodal learning through media: What the research says: *http://www.cisco.com/Web/strategy/docs/education/Multimodal-Learning-Through-Media.pdf* .
11 Camtasia Studio: *http://www.techsmith.com/camtasia.asp* .
12 Articulate Presenter: *http://www.articulate.com/products/*

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[13] What is an API? *http://www.youtube.com/watch?v=UcHhws TIK_o* .

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Increasing Interoperability of E-learning Content in Moodle Within a Franco-Arabo Educative Context

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This article examines how Moodle, as an open-source Learning Management System, can be made more interoperable. The authors tested two software standards, LAMS and RELOAD, compatible with socio-constructivism norms. The analysis showed that pedagogic activities created with the LAMS-IMS Learning Design Level A Format are useable with Moodle but not RELOAD-IMS-LD. Twelve experts validated the solution and suggested that the system could also be used in blended learning.

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Introduction

One of the burning issues of the digital age is the sharing of resources. Given the scarcity of resources concerning quality e-learning content in the Middle East, and in neighboring North Africa, how can one manage resources in a sustainable way?

Before addressing the question, it should be borne in mind that powerful vested interests see such sharing as a potential threat. For sharing, agreed access to resources ushers in a new form of openness and accountability that calls into question an ideology of amassing information to gain socio-economic dominance. One but needs to recall in 2004 how the European Commission called to task software giant *Microsoft* for not giving accurate documentation to enable the exchange and reusability of data between non-*Microsoft* work group servers and its *Windows* counterparts. In short, what is at stake is the issue of interoperability, i.e., shared modes of exchange and re-use of data between different operating systems, which is inevitably linked to power and user choice.

In this article, we argue that interoperability is a major step towards sustainable development, notably in countries where (digitally based) resources are limited. With this in mind, the originality of our study lies in its focus on the production of French-speaking pedagogic activities in Moodle and other similar plat-forms. To do this, we examine the production process complying with two technical standards, SCORM and IMS-LD, through a standard-compliant authoring tool, RELOAD. We also examine their incorporation into a Moroccan-based Moodle system.

What Is Interoperability?

Interoperability implies the ability of different systems to exchange data through shared formats and protocols. Computer engineer Paul Miller (2004) puts forward six "flavors" of interoperability: technical interoperability, semantic interoperability, political/human interoperability, inter-community interoperability, legal interoperability, and international interoperability. Viewed in this way, interoperability is not the exclusive domain of engineers. At different levels, interoperability invariably involves educators, learners, and the every-day citizen.

Context of the Study

Our study highlights the lessons learned in creating and giving access to pedagogic contents on the open-source Learning Management System called Moodle in accordance with interoperability standards and the educational context of French-speaking students of space and technology sciences in Africa and the Middle East. It is vital to identify the salient features of the context because the success of an e-learning system is ultimately judged on

how it satisfies the needs within a given context.

In our case, students in space and technology sciences need to be able to produce and complete pedagogic activities using satellite data (e.g., satellite images, satellite databases, geographical databases). However, in many North African and Middle Eastern countries, access to data-intensive material, like satellite data, through the Internet, is severely handicapped by factors like bandwidth availability. Even if one manages to download satellite images in off-peak periods, there remains the major problem of finding an appropriate physical means to store the mass of downloaded data. Interoperability of available downloaded data is one way to circumvent this problem.

In our aim of making the concept of interoperability a sustainable hands-on tool, one major challenge is how to use a free and open-source system, like Moodle, that is not directly compatible with the specifications of the IMS-Learning Design tool. Moodle, however, accepts imports from a learning authoring tool called LAMS, and this is compatible with IMS-Learning Design (LD) Level A. This technical method to access Moodle with IMS-LD means that learners must open up a LAMS before using Moodle. It, however, reduces ease of access for learners.

Objectives

The four key tools used in the study, Moodle, SCORM, LAMS, and IMS-LD, underlie the pedagogical objectives of the study. First, Moodle (*Modular Object-Oriented Dynamic Learning Environment*) focuses on active learner participation with the system. For example, Moodle allows learners to comment on and contribute to entries of a database. Moodle can also lend itself to a socio-constructivist approach to learning; cf. El Harrassi, Bennani, and El Faddouli (2007). Second, SCORM (*Sharable Content Object Reference Model*) is based on the idea that "learning" essentially occurs due to the sequencing of pedagogic contents, rather than due to the inherent quality of isolated pedagogic activities; cf. Pernin (2006). It operates by obliging learners to take a predetermined series of paths when navigating through pedagogic contents. This means that the structure of "lessons" regroup various elements in a "module," and various "chapters" from an element. A chapter provides a series of pedagogic "sequences" with one or several "resources" linked to each sequence.

This approach allows learners to bookmark their progress when taking breaks. It also ensures that learners' test scores have a good level of "acceptability." Third, LAMS (*Learning Activity Management System*) is an authoring tool, a designing platform of pedagogic activities, and a platform for learners to perform group or individual tasks (e.g., quiz, surveys, forums, tests, wikis) with tracking facilities available for tutors. The system has a graphic interface to help organize pedagogic tasks. For example, when learners have successfully finished a pedagogic sequence, they go on to a next sequence.

Finally, *IMS-Learning Design* (a metalanguage tool for modeling "learning" processes) provides an overall regrouping structure in linking pedagogic activities to appropriate resources. This encourages a flexible approach to learning/teaching (pedagogy); cf. Koper (2004); Belqasmi, Bentaleb, Benkiran, and Ajhoun (2001). In this way both SCORM and IMS-LD allow pedagogic content to be coherently structured in terms of both technical specifications norms and pedagogic standards.

Our Hypothesis

For ease of access, it is important that learners have access to pedagogic content in Moodle via only one standard Internet browser (e.g., *Firefox, Flock, Internet Explorer*) and that they not be burdened with having to open up a LAMS before using Moodle. Our research question can be formulated in the following way: Can Moodle be made more interoperable in accepting IMS-LD data, even if, at first glance, Moodle and IMS-LD are inoperable? This leads us to our two-fold working hypothesis:

Hypothesis 1. Pedagogic activities created with LAMS-IMS Learning Design Level A Format are useable with LAMS, and thus in Moodle (Release 1.9).

Hypothesis 2. Pedagogic activities created with RELOAD-IMS-LD are useable in Moodle.

To test our hypothesis, our method applied the well-known interoperability specifications of SCORM and IMS-LD that enable reusability of pedagogic content in different environments (Madjarov 2005), notably in Moodle and LAMS.

Results and Discussion

The main challenge of the study was to find a way of making Moodle accept data from IMS-LD. After completing the tests in the study, *Hypothesis 1* (pedagogic activities created with LAMS-IMS Learning Design Level A Format are useable on Moodle via LAMS) was confirmed. However, *Hypothesis 2* (concerning pedagogic activities created with RELOAD-IMS-LD) was not confirmed. We successfully tested an open source IMS-LD engine called CopperCore on a virtual JAVA machine to enable IMS-LD to run in Moodle. That said, setting up such an environment is no easy task, essentially, because one has to work in a linear "command-line" mode format rather than a more globalizing, "graphic" mode of configuration.

We also created SCORM-friendly pedagogic content and IMS-LD-friendly pedagogic activities. We used a SCORM approach to integrate IMS-LD elements given that Moodle is not directly compatible with IMS-LD.

This involved studying the possibility of creating both pedagogic content and pedagogic activities into one SCORM-friendly package. This turned out be a success, making Moodle more accessible.

Our solution involves using SCORM-friendly pedagogic content in the authoring tool RELOAD and its deployment in Moodle, while on the platform LAMS, an IMS Learning Design Level A Format approach is applied for use in Moodle (El Harrassi, 2008). The strength of our solution is its flexibility in incorporating different pedagogic approaches and individual learning preferences (Labour, 2002).

In a questionnaire survey, 12 experts (lecturers, researches, engineers) in space and technology sciences validated our solution. Practically all the experts suggested that the approach could be used in blended learning (El Harrassi, 2008). This is one way of assuring reuse of existing resources. As Labour and Kolski (in press) highlight, however, resources used in blended learning bring with them different modes of organizing teaching and learning processes that the system needs to take into account. Marrying the binary limitations of a computer system with the complex phenomena of encouraging knowledge acquisition involves ongoing critical reflection and field tests. This is no easy task.

Conclusion

In this article, we have explored ways of sharing Web-based resources with free and open software that is compliant with international standards of interoperability and a socio-constructivist approach. To do this, we found a novel way of making a Learning Management System, like Moodle, more interoperable, in creating and presenting pedagogic content and pedagogic sequences that can be reused as autonomous applications. This study will contribute to increasing the use of open-source software in the Middle East and more sharing of content between educators in the region. ☐

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Dynamic Learning Objects to Teach Java Programming Language

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This article describes a model for teaching Java Programming Language through Dynamic Learning Objects. The design of the learning objects was based on effective learning design principles to help students learn the complex topic of Java Programming. Visualization was also used to facilitate the learning of the concepts.

Introduction

In today's world, Java is the most popular language offered to undergraduate students. Many teachers and educators face quite a number of challenges while teaching the introductory programming courses. It is

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essential for educational institutions to help their students build sound academic knowledge about the latest technologies so that the students will be prepared for the future and have a strong foundation for a good career. This article deals with teaching strategies that would result in successful learning of Java Programming.

In the section below on Problems and Challenges in teaching programming language, many approaches are reviewed, and challenges posed by many educators are presented. The significance of learning objects and how they would be helpful in teaching Java concepts and the theories required to be considered in designing a learning material are discussed in the Learning Objects section. Various educational theories that need to be taken into consideration in the teaching-learning process are reviewed in the section on Learning Objects and Pedagogy. The components of the model designed are discussed in The Present Model: The Dynamic Learning Object (DLO).

The approach suggested in this article integrates the syntax teaching approach as well as dynamically showing the execution of the programs written by the learner as learning activity in an interactive, self-paced environment. This approach requires the teacher to facilitate the learning and to provide more support in a classroom setting.

Problems and Challenges

The important concepts, such as structured programming, object-oriented programming, class design, abstraction, and code reuse, should be designed properly to ensure that these concepts are easy to learn. In addition to explaining syntax and the construction of a well-formed program, a programming course has to include techniques for problem solving.

One of the major issues related to teaching an introductory programming course is the amount of time spent on the language's syntax, which leaves little time for developing skills in program design and solution creativity.

There are many instances we have seen when students learn the language for clearing the initial course, but when doing the next level, they are not able to continue the learning of the programming language. This hurdle may be due to various causes, such as differential teaching methods from different instructors, lack of proper instructional materials to support learners, and lack of understanding of essential basic concepts.

The concepts and methods taught at the beginning affect the way students think about and analyze problems. The problems to be solved using programming languages need a sequential logical thinking pattern, to visualize and forecast the situation. Better understanding of these basics will motivate them to delve into them. Teachers are looking for new methods and approaches which would support their teaching and motivate the learner in the direction of learning a new programming language with more interest.

Learning Objects

One of the best approaches is to design a learning object which would engage the learners' attention, make them understand the relevance of the concepts, and gain confidence and derive satisfaction, thereby motivating them to learn the programming language. For this article, we adhere to the following definition of a learning object: A learning object is a unit of digital resource that can be shared to support teaching and learning.*

Learning Objects and Pedagogy

Developing a learning object is a challenging job, and equally challenging is making it motivational to learners. Connected learning takes place with personalized learning objects. Learning, for each individual, is a continuous process throughout life. People learn at different speeds. Hence educators, as well as people who design learning objects, should know the abilities, interests, and special needs of learners. Whenever a learning object is developed, the developer should engage the learners in the content, enhancing cognitive engagement between the learner and the content.

We have tried to adopt the motivational theory of ARCS† (Attention, Relevance, Confidence, and Satisfaction) and the significant pedagogical strategies to design a constructive learning object model.

The Present Model:
The Dynamic Learning Object (DLO)

From the observation and study of the various successful models, we decided to create a simulated environment and to give a touch of dynamism that would compile a complete learning object for any topic of Java Programming language. Initially Conceptualization is done and then Visualization occurs.

In this model, we are presenting the general concepts in the introductory pages. We try to attract the *Attention* of the learner by providing day-to-day instances of using the concept to be learned. Then we have the application and execution demonstrated with the examples given. The problem is broken down to make the learner understand the logic approach needed to solve problems for computers. The learner understands the *Relevance* of the concept in the context of programming language. The next step is to gradually construct the knowledge given into a new program. This will raise the *Confidence* of learning the concepts in the learner. While solving the questions in the interactive environment the learner would reach the state of *Satisfaction*. Thereby the model achieves the goal of being an ARCS based model,

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* Wiley, D. *The instructional use of learning objects; http://reusability.org/recd/chapters/wiley.doc* .

† Keller, J. M. (2009). *Motivational design for learning and performance: The ARCS model approach.* New York: Springer.
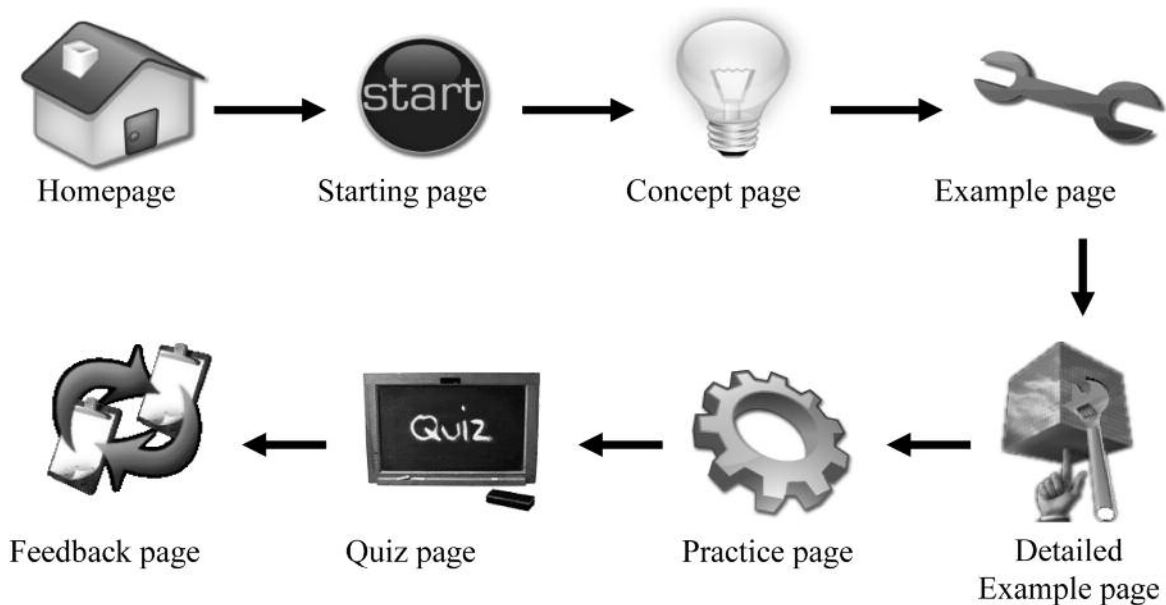
Figure 1. The DLO Model

contrary to the view that learning resources currently in use do not permit the reuse of learning resources in a constructivist approach.

The goal of our model is to provide the static pages for understanding the concepts and to allow the learners to enter their own programs and to see the compilations and the outputs, thus tailoring both the static and dynamic situations to produce a DLO.

This is a compound model that comprises the static usage of flash objects and connections to a dynamic environment—a real-time environment to show the execution of the programs.

The DLO Model

The schematic diagram of the model is given in *Figure 1*.

Analysis of the Pages
1. Homepage

This page consists of text, images, and links. It introduces the Website, describes the learning objects, and shows the objective. In addition, it provides links to plug-ins and requirements needed, which are Flash player and JRE (Java Runtime Environment), and a link that leads to the Lessons page.

2. Starting page

On this page, there is a list of the lessons with title and a brief description. Each is a link leading to the learning object of that lesson.

3. Concept page

The aim of this page is to introduce the concept using examples from real life. This page consists of animation and textual description. There are buttons to control the animations and to proceed to the next page.

4. Example page

This combines the real-life example with Java programming language using animation. Through this page, we show the student the program and an example. There are three parts: text, animation and the program, and buttons to control the animation.

5. Detailed explanation page

Here, we explain the previous example step by step. There are buttons to control the animation. Thus, the student can type the complete program, see the result, and visualize each step.

6. Practice page

Provides a complete program. Here, also, the student can type the complete code and see the result.

7. and 8.

These are followed by *assessment* and *feedback*.

Conclusion

These objects are dynamic, and the flow of concepts in a sequential order helps the learners to have a good grasp of the subject as well as allowing independent learning to occur. Such learners are able to solve complex problems using Java Programming Language, which is the main goal of teaching it, leading to capacity building. These objects are reusable, interoperable, and possess all the characteristics of good learning objects. The learners derive satisfaction in their learning and gain confidence to solve problems independently.

A repository of such DLOs will be created and will be accessible to university teachers. The model is planned to be implemented as part of teaching the first Java course at our university. The suggestions from teachers, students, and other stakeholders will be taken into account, and modifications will be done periodically. ☐

Performance Appraisal of College-Level Learners Using Smart Boards

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This article reports on the evaluation of the use of Smart Boards in learning and teaching second-language writing skills. Results showed that the use of Smart Boards in learning and teaching improved students' second-language skills.

Introduction

The main objective of the study reported in this article was to compare the effectiveness of learning second language writing skills with and without use of the Smart Board in class. A Smart Board is a display device which is touch-sensitive and enables the teacher to display information and images from a computer on a large screen. The teacher can also control the computer by touching the Smart Board.

The Participants

The study was conducted among two groups of students with a random sample of 10 male and female students from each group. They were all enrolled in the pre-intermediate level at the College, age ranging from 18 to 21 years. In both groups all 20 students were Omanis. All of them are learning English as a second language and share the same cultural background. These two homogeneous groups passed their examinations at government schools under the same curricula, but they commit different types of errors. The lack of cohesion and coherence and tense errors were the most serious and frequent ones, especially in free-writing essays.

Methodology with the Smart Board

Raimes (1983, p. 40) says "effective communicative tasks can be derived from diagrams, tables, graphs, and

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charts. Students deal with given information presented visually and they work on conveying the same information in writing." The students' fourth essay, describing a graph from their syllabus, was chosen as the experimental writing. To complete this essay, participants need to know the components of a graph and the special vocabulary to describe the changes. They also have to learn different sentence structures using kinds of adverbs and adjectives apart from general vocabulary and grammar.

Participants were asked to attend the classes in the Smart room (where the Smart Board is placed) for two weeks to learn the essay. The 3D representation of graph and matching game attracted students to do more activity with the Smart Board. The graph was presented to them, accessed through the Internet and some in-house. Different types of needed vocabulary, for example, peak, dramatic change, gradual change, and other kinds of variations in graphs, were presented through a 'dragging game' using the Smart Board. Students showed enthusiasm to do the activities on the Board. Vocabulary games like matching proper adjectives with vocabulary made learners more active.

The option of an online dictionary, spellcheck, and choice of synonyms helped students to error-correct themselves and encouraged them to a faster submission of their first drafts. The "save" feature on the Board helped students to refresh and retrieve their written information as well as the teacher's notes for the next class.

The Smart Board became a means of motivation and one could see that participants were waiting for writing sessions to work on the Board, which was not at all a normal practice with them. Different features on the Board, where participants can help create and participate within a small classroom environment, made them self-responsible and confident to submit a better draft. They resolved the guided exercises on their own laptops, and they were error-corrected by their own peer group through the Smart Board.

Criteria for Assessment

Carrol and West (1989) cited in Tribble (1996, p. 130) noted that "One approach to evaluation that has been widely adopted over recent years makes use of multiple yardsticks, so that the text is not assessed on a single dimension but is viewed as being the result of a complex of different skills and knowledge." However, the established practice in Caledonian College is that Fluency, Content, and Convention are merged into one under 'Content & Coherence.' For this assignment, I have followed the same practice. Syntax covers the sentence structure, target grammar, and general grammar. The vocabulary criterion evaluates spellings, use of target vocabulary, and general vocabulary. While combining the criteria, serious care has been taken not to lose any component of assessment.

Findings and Discussion

Experimental Group. The experimental group comprised 10 students. More than half the group scored 80% or above in content and coherence. In syntax, one student scored 100, and 80% of students scored above 70%. In the vocabulary category, one student scored 100% and half of the group managed to write 80% of the target vocabulary.

Control Group. In the control group, only 10% of the subjects scored above 75% and half of the group scored in a range of 40–50%. No one could score above 80%, and instead 20% scored below 40, which is the passing grade at Caledonian.

The experimental group learned by viewing and touching a 3D graph image, which was easier and gave a clear perception to them about the graph being studied. The different changes in the graph and the vocabulary explaining those variations were shown through the Smart Board and reviewed from time to time because each was saved and displayed on the Smart Board notebook. Moreover, even slight variations on the graph were clearly illustrated on the huge board. Such diverse and creative teaching materials and techniques enable increased student enjoyment and interest in the classroom.

Conclusion and Recommendations

This study of the effectiveness of the Smart Board in teaching writing skill has underlined the gains and possible problem sources for classroom use. It reveals that the Smart Board is an innovative and powerful support for language acquisition, especially for writing. After reviewing both the results from the study conducted and a review of literature, there are several reasonable points to consider about the methods of teaching and facilities of the college.

Teachers can take technology to a whole new height of usefulness in their classrooms. And, for those unfamiliar with technology, the self-study tool contained in the software can make their classroom not only a technology-friendly place, but also a learning-friendly place. Collateral support from administration or other teachers, as well as access to a network of users for supporting and sustaining effective computer learning, and to help in setting up equipment, can ensure effective use of technology in language instruction. Grabill and Hicks (2005, p. 308) remind writing teachers that "we think teachers must commit to this digital rhetorical perspective on writing, or they will miss the opportunity to help their students engage effectively in the ICT revolution taking place right now." □

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Digital Muslimas: ICT Skills of Females in Middle Eastern Countries

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This article examines women in Islamic countries with regard to sustainable futures, equity, and social justice. Some barriers to ICT use for women in the Middle East include access to computers, gender discrimination by employers, marginalized political participation, high rates of illiteracy, and lack of independence. Distance education offers a pathway to gain legitimate, respectable higher education qualifications and opens new pathways to learning, but online learning faces obstacles and potential culture barriers in Islamic countries.

Introduction

Sustainable development is the extent to which members of a society adapt themselves to reach a desirable, stable socio-economic future. Societies having a short-term orientation take their guidance from the past to try and

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fulfill their present needs and desires. Communication and the sharing of information are the keystones necessary to establish dependable, lasting human development. The situation for women in Islamic countries in regard to sustainable futures, equity, and social justice has been changing over time, but women in the Middle East continue to struggle for fair, equitable treatment.

Historically, scholars have paid too little attention to gender barriers in the dissemination of technology. To lump all Middle Eastern countries together is somewhat misleading, especially when focusing on gender issues. In general, though, access to computers, gender discrimination by employers, marginalized political participation, high rates of illiteracy, and lack of independence create serious challenges for Muslim women seeking enduring empowerment. Distance education offers a pathway to gain legitimate, respectable higher education qualifications and opens new pathways to learning, but online learning faces obstacles and potential cultural barriers in Islamic countries.

The Internet and mobile media technologies have altered the situation that formerly barred access to information, particularly news originating from Europe and the American continent. Women in the Middle East are now using modern digital tools not only to receive news, health information, spiritual advice, etc., but also to make connections, do business, promote their NGOs, and to share scholarly research. They have become active producers of multimedia content, which now allows them to inform others of their struggles, creative endeavors, and cultural perspectives. Information and Communications Technologies (ICT) are also wonderful tools to raise political awareness of human rights violations.

This article will discuss some specific projects, Websites, and campaigns, and will consider the current and potential future uses of ICT as part of an engendered intercultural dialogue.

New Media Journalism

Freedom of speech and of the press are prerequisites for controversial issues to be aired, yet debates about censorship continue unabated. Ironically, Middle Eastern censors in some countries use western technologies to block free speech. For example, the two government-run Internet Service Providers (ISPs) in Yemen, YemenNet and TeleYemen, use Websense filtering products. Both ISPs send blockages to users attempting to access censored content, generated by the commercial software, Websense WebFilter. In the case of YemenNet, the block page displays the message, "Access denied to the system by Websense Filter." The national Internet service provider in the United Arab Emirates (UAE), Etisalat, selected SmartFilter from the UAE-based distributor Fourth Dimension System (FDC). Article 26 of the Constitution of Turkey guarantees the right to "Freedom of Expression and Dissemination of Thought," and some other countries have laws protecting free speech, but the reality of implementation is problematic. The Centre for Media Freedom–Middle East and North Africa (CMF–MENA) was formed by a group of journalists, lawyers, human rights experts, and media professionals representing a dozen countries from Morocco to Yemen. Collectively, they oppose censorship across the Middle East and North Africa. It was the first independent non-governmental organization dedicated to defending victims of censorship and promoting free and independent media in the region.

Feminist cyber "bloggers" are strategically using old and new media to participate in the production and dissemination of alternative knowledge and the creation of transgressive spaces. The recent death of Neda Agha-Soltan during the June 20, 2009 Iranian election protests was captured on amateur video and was broadcast globally instantly on YouTube and Twitter before being usurped by traditional news media such as CNN. This demonstrated the power of a technologically savvy population to get the word out about problematic situations immediately. The consequence of one woman's death and the resultant dissemination of images via ICT has not only impacted internal politics in Iraq, but has made this teenager a martyr worldwide.

Another demonstration of the power of the Internet in awareness-raising was the campaign about child brides in The Yemen Times, a popular online English language newspaper (*http://www.yementimes.com/*) spearheaded by female editor Nadia Al-Saqquif. Nadia adopted the cause of Nujood Ali, the first ten-year-old to request a divorce in Yemen and turned it into a global campaign, which ultimately led to a change in the country's laws regarding early marriage.

Women have an exceptional capacity to gain attention and promote justice and reconciliation. An international network of empowered Muslim women (Women's Initiative in Spirituality and Equality–WISE) plans to use their Web portal as a platform for gender-based scholarship. Diverse muslim women around the world will soon have a forum to discuss issues of significance. Members include professors, journalists, lawyers, doctors, politicians, NGO directors, teachers, mothers, housewives, and activists working in the trenches on women's rights issues. Their Website at *www.wisemuslimwomen.org* was officially launched in 2009. The intention is for this to generate influential leaders who will empower women in local communities, developing skills in literacy, microfinance, Qu'ran interpretation, and ultimately building a capability network that crosses borders and spans cultures.

Queen Noor of Jordan effectively used YouTube rebroadcasts of her interview with CNN's news host Wolf Blitzer to advance her platform about gender justice and women's special role in peacemaking and conflict recovery. Her online "Mothers Day for Peace" campaign

bridged war zones and conflict lines. Queen Rania Al Abdullah of Jordan (her Twitter is QueenRania) blogs about the rise of women in Middle East as a result of technology and education. She is very accessible and communicates with those people who share her interests.

Television and Film

The battle for the image of women in Arab societies also rages on, despite the damage created by the Taliban, and Hollywood movies such as "Not Without My Daughter" (1991), the story of Betty Mahmoody's escape from Iran. Modern media assumes an important cultural role in connection with women's issues and in popularizing images of Middle Eastern women in the mass mind. Television serials and advertisements are influential in challenging clichés and traditional gender perceptions of females as inferior.

A vast number of Islamic homes are penetrated daily by broadcast images of Western women living alternative lifestyles in disparate settings. Despite the diversity of messages, many shows celebrate the achievement of the individual at the expense of the community, while glamorizing un-Islamic relaxed sexual morals, promoting instant gratification, exalting quick profits, and glorifying celebrity stardom. Thus, the living room in Arab countries has become a family battleground in the media information war.

For decades, the nations of Afghanistan, Iraq, Lebanon, Palestine, Yemen, and Syria have produced talented and notable independent women filmmakers. Their works are often semi-autobiographical, and politically controversial, and they provide us insight by viewing seldom-seen facets of Arab societies, while embodying an alternative women's 'model,' reclaiming images of women that are far removed from most dehumanizing western stereotypes of downtrodden, dominated victims. Filmmakers who have received recent international critical acclaim include Palestinians Annemarie Jacir *(Salt of this Sea)* and Najwa Najjar *(Pomegranates and Myrrh)*, and Lebanon's Nadine Labaki *(Caramel)*, Joanna Hadjithomas *(A Perfect Day)*, Danielle Arbid *(A Lost Man* and *In the Battlefields)*, and Jocelyne Saab *(Dunia)*. Their work, along with films by Egyptian Inas al-Degheidy (whose *Mothakerat Morahkah* is considered one of the most controversial films ever made), Tunisian Raja Amari *(Satin Rouge)*, and Algerian Yamina Bachir-Chouikh *(Rachida)* effectively shred well-established misconceptions and labels surrounding Middle Eastern women being denied the capacity to express themselves.

Education and Online Learning

Traditionally, scholarship programs in the Middle East have emphasized a wider range of opportunities for males than females, focused on achieving legitimate educational qualifications. Gender differences in Saudi Arabia are being dismantled by a government-sponsored scholarship program sponsored by King Abdullah himself. The Saudi Arabian King Abdullah Program Scholars enrolls significant numbers of women. While Saudi women still need permission from male guardians for their most basic decisions, this King Abdullah Scholars program is sponsoring both men and women for co-educational study at universities abroad, in Malaysia, the UK, Australia, and New Zealand. The women are majoring in fields like computer science, Internet security, intellectual property law, and mass communications, among others. All show tremendous aptitude using digital technologies with a desire and willingness to become proficient at using ICT tools. The foresighted objective is to train young Saudis so they can eventually return equipped with cutting-edge technology skills and business acumen in order to replace the expatriate resident workforce with competent, well-trained, educated Saudi Arabians.

Certain scriptural interpretations, *fatwas,* and well-established Middle Eastern culture values have entrenched the status of women as intellectually inferior. Despite tradition, the number of women enrolled in universities in the Middle East is quickly overtaking the number of men at places like Islamic Azad University (Iran). The encouraging research of Djavad Salehi-Isfahani, an Irani guest scholar at the Brookings Institution in the USA, indicates that female students outnumber males in higher education in most of the Islamic countries in the Middle East and North Africa.

Still, universities segregated by gender are common in the Middle East. A quick sampling survey of the offerings notes the following options available to young women who remain in the region for tertiary education and are interested in ICT majors:

- *Royal University for Women*, Kingdom of Bahrain *(http://www.ruw.edu.bh/main.asp)* offers a four year BS in Computer Science and IT.
- *Dubai Women's College* (DWC), Dubai UAE *(http://dwc.hct.ac.ae/-)* has a Diploma and Bachelors program in Applied Media Studies (Applied Communications) as well as a Diploma in Applied Technology Skills, Business IT, Computer Networking, software engineering, and IT Administration. Students participated in the first Middle East International Film Festival (MEIFF) that took place in Abu Dhabi in October 2008.
- *Box Hill College*, Kuwait *(http://www.bhck.edu.kw)* Centre ICT is aligned to teach in specialist areas such as computer systems, networking, electronics, information management, and all aspects of information technology, including: programming, databases, operating systems, networking, and computer hardware and software.
- *College for Women* is a separate faculty at *Kuwait University*, which has Information Literacy & Communication, Information Technology, and one of the few e-learning portals

(http://www.kuniv.edu.kw/c_woman.php).

- ***Effat University***, Jeddah, Saudi Arabia *(http://www.effatcollege.edu.sa)*. This fairly new private female higher education institution offers majors in computer science, information systems, and more. They recently held a learning and technology symposium with a focus on "Cyber Citizenship: Vistas and Visions."
- ***The Future Institute of Higher Education & Training for Girls***, Jeddah, Saudi Arabia *(http:// www.future-center.com/portal/)* has practical computing ICT (vocational MS Office skills) and a Diploma in Graphic Design & Digital Art, as well as a Computer Assisted Design (CAD) major.

There is a body of research regarding the different learning styles of males and females which is beyond the scope of this article. However, some differences include the types of teachers students admire (males prefer brilliant; females prefer friendly), their attitudes towards competition, achievement, failure, and gender divides in attraction to scientific topics.

While all young people find university advancement difficult nowadays without some computer literacy, e-learning (either totally online or hybrid) programs are gender-neutral, offering women a non-threatening way to upgrade their academic credentials and qualifications. Unfortunately, distance learning and teaching has not been embraced widely in Muslim countries, despite its proven legitimacy and profitability in the West. Part of this has to do with noted cultural differences in the way learning is perceived by various social classes, cultures, occupations, organizations, businesses, and academic institutions. Employers in the Middle East are most impressed by foreign degrees; distance education is not yet viewed as a genuine, viable alternative.

Values are the stable core of culture. Values and cultural practices are transferred from parents to children after birth through the age of about 20 years old. Middle Eastern students are very respectful towards and dependent on their teachers. Education there tends to be very teacher-centered, with the instructors initiating all communication in class. Lecturers are perceived as gurus who transfer their personal wisdom. Distance learning tends to be student-centered with teachers as facilitators and treating students as equals. Peer communication is crucial, with an equality of power in interactive communications.

Middle Eastern students, particularly the women, want to know the right answers. They avoid uncertainty. There is a pressure among students to conform, and please their parents, and while e-learning encourages discussions, Middle Eastern students want teachers who know all the answers, and thus are uncomfortable in learning environments that are unusual and differ from the norm. E-learning faces many credibility challenges before it can gain popularity in Middle Eastern countries.

Strengthening Women's Activism in the Public Sphere

Empowered women have the ability to devise new uses for information technology, to find and create information, and act as multimedia designers, not just ICT users. Community service initiatives are the way that ICT proficiency will trickle down to the average female in the Middle East apart from the university educated elite. One recent locally generated example was the Diploma Year Two evening students at Dubai Women's college, which launched a one month "Family Computer School project" in 2008 to enhance computer literacy among women in the local community. The project was so successful that it was repeated in 2009.

Community learning labs (sometimes called community technology centers) are a potential mechanism for disseminating ICT knowledge to the general public and civil society. Some initiatives were funded by technology corporations, non-profit agencies, UN agencies and bilateral donors, etc. Projects are generally designed to include training of lab monitors, teachers, and equipment maintenance in order to remain sustainable beyond the pilot phase. Child care is often provided during class times.

Sponsored by the U.S. Department of State, the Middle East Partnership Initiative has devoted much attention and a large financial investment to the Women in Technology (WIT) Project*(http://www.witmena.org/)*. Their successful strategy has been to work through existing women's and local NGOs in target countries, in partnership with governments and Microsoft Corporation. Initially, the WIT program was developed between the Institute of International Education (IIE) and the SOUL for the Development of Women and Children in Yemen to train women to work in the field of Information Technology and to empower them to participate effectively in the development of their society economically and technically. Since the program's initiation in October 2005, the program has trained more than 1,135 women in ICT. Because of the successes of the program in Yemen, the funding agency was encouraged to implement the program in other countries in the region, such as Saudi Arabia, Jordan, Oman, Lebanon, Morocco, Bahrain, and UAE. In addition to workshops, WIT initiated a Forum for Women in Technology, which creates links among participants and assists graduates in accessing job opportunities, thus enabling women to expand their contribution to the workforce.

Additionally, WIT and Microsoft have helped to build capacity and sustainability in the Middle Eastern women's organizations that serve as their partners. Some of these include the Bahrain Women's Union (*http://www.witbahrain.org*), the Omani Women's Association, Tapuah Women's Initiative in Israel, the Kuwait Economic Society, and the Turkish Civil Society Development Center. Intel Corporation is also funding technology centers and train-

ing for Palestinians in collaboration with the Mohammed Bin Rashid Al Maktoum Foundation and the Ministry of Education as part of the World Ahead program.

The Future

"Arab women have achieved much by way of enlarging their capabilities through their own efforts. They have registered outstanding progress in education, made their mark through their merits and skills in work and business, asserted their capacity to assume leadership positions, increased their participation in economic activity and pushed forward their role in national public affairs in all Arab countries. This must be the starting point for Arab development efforts and the basis for pursuing improved development indicators and progress in the deployment of women's capabilities."*

The potential of ICTs to promote women's empowerment, educational advancement, and cross-border networking in the Middle East faces challenges, but it has the potential to transform new forms of communication into real opportunities for sustainable development. Individual women using ICTs and ubiquitous mobile phones are empowered at a local level to share knowledge of Islam and other topics. As they further develop their skills through practical use, women gain insight about issues that impact them and build capacity to voice their concerns, get involved, and make more informed decisions. As ICT capacity expands, it will allow Muslim women to overcome some of the social and institutional barriers that have barred them from participation in economic and political processes. Indeed, the dissemination of ICT tools with the resultant social networking is likely to improve the overall quality of women's lives. □

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What Is the Headteacher's Role in ICT Progress in Schools?

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This article describes the role of the headteacher (or principal) in successful implementation of ICT in schools. It highlights the importance of the headteacher to understand and lead the change process, and having a clear and shared ICT strategic plan. The article also explores the major factor of ICT progress, the continuous professional development for school staff in general, especially headteachers.

Introduction

ICT, information and communications technology, is affecting every aspect of our lives, imposing great pressure on schools to change. School stakeholders need to use ICT to improve students' achievement and to prepare students for contributions in the digital, globalized world (Beare, 2001; NACCCE, 1999). Policymakers and researchers are concentrating on teachers' use of ICT to empower the ICT progress. Nevertheless, teachers cannot be responsible for ICT innovations in schools. ICT implementation was left for years to ICT managers (Warwick, 1997). However, with more use, demand, and expectation from ICT in schools, head-

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teachers (or principals) should take over to ensure the right diffusion and progress of ICT. This article explores the crucial role of headteachers in ICT progress in the Arab world.

Rationale

Because of the lack of ICT research in the Arab world, I will depend on my own experience to describe the current situation. For the last nine years, I have worked in Saudi Arabia and Lebanon to develop the use of ICT in schools. I also visited different educational institutions in several Arab countries: Syria, Jordan, Bahrain, Dubai, and Oman, and had a look at their ICT systems and how they manage them. School principals, as called in the Arab world and in the USA, or headteachers as called in the UK, were concentrating mainly on providing ICT skills training sessions for teachers to enhance ICT use in schools. This was not enough to push for school reform using ICT. I noticed that headteachers' beliefs, involvement, and commitment to ICT progress were key factors in a successful ICT implementation.

Following are examples of different headteachers' attitudes towards ICT, ranging from inhibitors to supporters of ICT progress. I have to thank these headteachers, this article's main inspirers. Some headteachers think of ICT as a stand-alone subject only, missing the benefit of ICT use in other subjects and the overall school system. With such an attitude, they act as inhibitors to ICT progress. Other headteachers deny its necessity, but acknowledge it is something 'nice' to have. They may help the ICT-enthusiastic teachers in schools, but will not require other teachers to do the same. Some other headteachers may have a strong belief of ICT in education, but they impose their own vision and change management. Worse than inhibitors, they face strong resistance from teachers towards using ICT. Some headteachers may have a strong belief in ICT impact but with wrong perceptions of its effective use. Some may think that ICT in education is achieved by installing expensive hardware and software throughout the school. The most widely spread situation is where headteachers, seeing ICT as a complicated matter, are leaving the entire job of ICT progress in schools to the ICT managers, coordinators, or teachers. Definitely, the lack of the key person's endorsement would negatively affect the likelihood of ICT success. Put simply, what's needed in schools is for headteachers to be aware of their important role in ICT progress—and taking the lead in this.

Even with the literature review, which included research conducted in different countries, Europe, Asia, and USA, I detected the shortage of studies on the direct relation between headteachers and the effective and successful use of ICT, or the headteachers' role in ICT progress. The ICT literature has largely ignored the role of the headteacher (Michael, 1998). The leadership of the headteacher or principal, though, is a key factor in

bringing about change (Schiller, 2003).

Leading and Managing ICT

Managing ICT was left for years almost entirely to IT managers (Warwick, 1997). The role of school directors in ICT progress was unseen for a long time. Even in the UK, where a strong belief in ICT in education and billions of pounds were spent on ICT in education since the 1980s, only in 2002 did NCSL (National College for School Leadership) introduce the SLICT program, the Strategic Leadership for Information and Communication Technology, which "focuses on the strategic role of headteachers in leading and developing ICT" (GateHouse, 2007).

Headteachers' Job Analysis. It is known that an effective school is related to effective leaders (Bush & Jackson, 2002; Dalin, 1998; Jirasinghe & Lyons, 1996). This is true for every feature in the school, including ICT progress. To illuminate why ICT became a crucial part of the headteachers' job, I will consider the key tasks and activities of headteachers from the research data and literature findings of Jirasinghe and Lyons (1996), summarized in ***Table 1***.

Looking at the different tasks in this table, one can see that ICT exists in two facets: As an important part that should be managed and as a tool of management. For example, in the *planning* task, headteachers have to plan for the ICT progress in the school, and at the same time headteachers need to use ICT resources to do the school plan. This simple 'ICT reading' of this table reveals the diffusion of ICT into the headteachers' tasks, and consequently the critical role of headteachers in ICT progress.

Leading the Change. Headteachers need to lead the change, not only manage it, and by no means be managed by the change. Albeit the task of a manager is needed for managing ICT, what is more vital is to have a headteacher with a leading personality to initiate the ICT change and be able to empower it in all its progressive development stages. It is imperative for headteachers to understand and keep in mind the potential threats to teachers' self-esteem during the transition (Adams *et al.*, 1976, cited in Garrett, 1997) and the Rogers (1962) diffusion of innovation theory for the effect of ICT change on the school community. This will enable headteachers to recognize how they should deal with this change and what to expect from school stakeholders; and consequently have a plan of support, motivation, and evaluation.

"Change can provide both challenges and threats. At a personal and professional level, it can call into question values, beliefs, and practices that were previously assumed and accepted by teachers" (Stevenson & Hassell, 1994, p. 210).

ICT Strategy. It is important to establish a shared vision for the school purpose and future, and consequently a shared strategic plan (Preedy *et al.*, 2003).

Table 1. Key tasks and activities of the headteacher.

The main task areas and their associated principal activities – given in a rank order of importance – for the job role with ICT are:	
(1) Planning Planning long-term objectives Setting up financial budget Planning short-term objectives **(2) Motivating** Creating a good team spirit Encouraging cooperation Gaining willing cooperation **(3) Assisting/Caring** Looking after needs of people Looking after emotional needs Assessing learning difficulty **(4) Appraising/Evaluating** Assessing needs of people Creating confidence Appraising for promotion/recruitment **(5) Implementing/Coordinating** Organizing resources Ensuring efficient coordination Allocating resources **(6) Deciding** Deciding action—with others Making decisions after evaluation Decisions affecting welfare, etc.	**(7) Controlling/Directing** Controlling people resources Directing implementation of policy Ensuring agreements adhered to **(8) PR/Developing relationships** Getting on well with team/unit Maintaining good PR Establishing a network of contacts **(9) Counseling** Advising to improve job performance Counseling on personal problems Advising on interpersonal behavior **(10) Influencing/Advising** Advising governors Making a spoken case for action Arguing a case in formal meetings **(11) Learning/Researching** Keeping abreast of developments Learning new systems/methods, etc. Undertaking informal training **(12) Assessing/Evaluating** Evaluating output of the system Making a logical evaluation Evaluating alternatives

(from Jirasinghe & Lyon, 1996, p. 79)

There is no "fit for all" school ICT strategy. Schools differ widely from one country to another, regarding the national educational policies and community culture, pressure, and cooperation. Likewise, schools differ in budgets, teachers' skills, backgrounds, and beliefs.

ICT Team. Crawford (1997) argues that ICT strategy could not be done by the ICT manager alone because ICT is spread over all the school system, tasks, and subjects. An ICT team is suggested (Comber 2007; Crawford, 1997; UNESCO, 2002) with the right choice of ICT team members.

Staff Development. To survive with our world's permanent level of change, continuous professional development (CPD) for the learning and education stakeholders has become a must (Glover & Law, 1996). Headteachers have been cited as the driving force to ensure teachers' commitment to ongoing CPD (Austin & Anderson, 2008; OFSTED, 2002; Wideen, 1992). Conte (1997) in his report, funded by the Benton Foundation, mentioned that "evidence strongly suggests that technology alone is no panacea. For it to work well for students and schools, we must build a 'human infrastructure' at the same pace we are installing computers and wiring." All school staff, including headteacher, need ICT continuous professional development. Not only basic skills training, but most importantly how to integrate ICT successfully into their jobs, administrative or teaching. Teachers' training is something that is agreed on, but headteachers ICT skills development has been slower to emerge (Bush & Jackson, 2002). In a study investigating the barriers in integrating Web-based tools into instruction, Hinson *et al.* (2006) declared that one of the barriers was the 'mixed message' perceived from the school principals. Although principals were showing a high interest in the project and were sending 'daily reminders' for teachers to use Websites, they themselves were *not* doing this, and were not responding to teachers' request for technical support.

Action Research. Action research is a step further from the reflective practitioner (Schön, 1983). It is a reflection with data. Educational technology is produced by manufacturers, developers, and designers outside the school. It is up to schools and mainly teachers to find out if this technology is good for their teaching and learning process or not. Action research is regarded as another way of professional development (Ridgway, 1997), where teachers learn from their own actions. Headteachers need to encourage teachers to have continuous action research.

Evaluation. Unfortunately, general studies show that "teachers do not put what they have learned into action" (Dean, 1991, p. 20), and that "teachers are willing to attend some introductory ICT courses, but are not so eager to continuously refresh their ICT knowledge and skills" (Pelgrum & Anderson, 1999, p. 229). Evaluation is done normally for two reasons, to know what went well and what went wrong and why, and to make sure that the money was spent wisely (Somekh, 2007). For a successful ICT progress, two kind of assessments are needed, formative and summative assessment.

Conclusion

"Principals are considered by their school communities as central figures in leading processes for creating the conditions to teach and learn with ICT" (Moyle, 2006, p. 10). Throughout this article, the great impact and value of the headteachers' role in the ICT progress was noted.
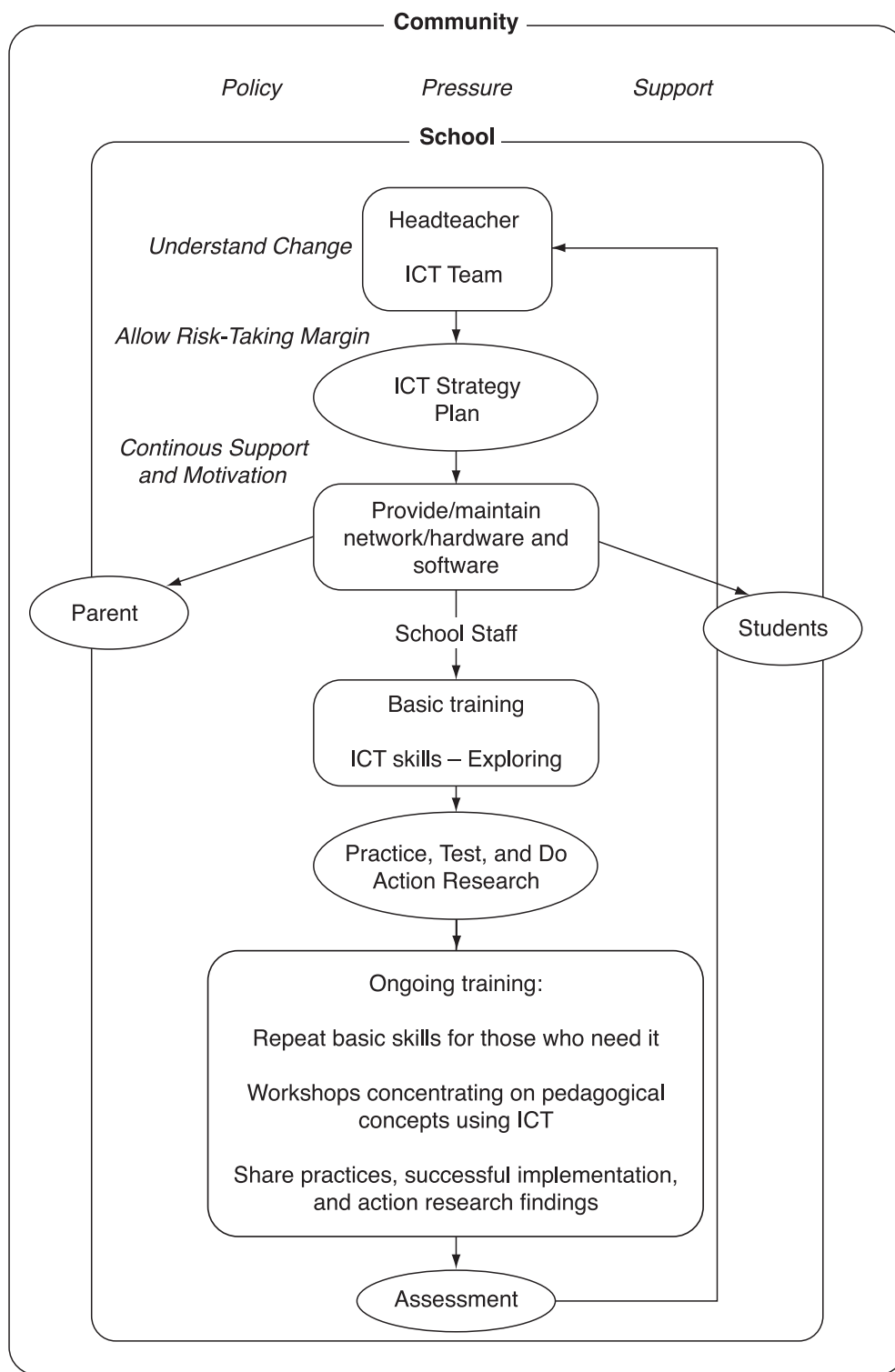
Figure 1. Model of ICT progress in schools.

On one hand, good ICT progress and positive impact was shown when headteachers were in charge; and, on the other hand, a slow improvement or some failure when headteachers were not committed. ICT progress is a huge load added to headteachers, who can find help from two sources: internal and external. Internal help can be obtained by building a strong, committed, creative ICT team; and external help from governments, communities, and parents, and most importantly from the headteachers community.

Figure 1 shows a simple model deducted from my experience and from the literature review. The school is a

part of the whole community, and it is affected directly by society practices. Several factors will affect the school, such as government policies, society demands, and parents' expectations.

After deciding to lead ICT change in school and beginning the ICT learning process, headteachers need to build the school ICT team. The first step to be done by headteachers and ICT team is setting the ICT strategy to ensure an effective ICT use in schools. From this point, different schemes could begin, one for staff development, another for the students, and one for parents. Basic ICT skills, exploring new software, and using new school systems training sessions should be conducted at the beginning of each new academic year. Later, ongoing training could be done to repeat basic skills for those who need it, sharing new findings, and experiencing and answering new questions evolving from testing and practicing.

Two kind of assessment should be performed: formative and summative assessments, in addition to the action research process. The results and feedback will go again to the headteacher and the ICT team, and the cycle will restart after the required changes and improvement.

Headteachers should lead and manage the ICT development in their schools. Research, case studies, suggestions of special kinds of models, and guides are needed in all the facets of this subject. □

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A Model for Implementing E-learning in Iranian Organizations

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This article reviews the current status of information and communications technology (ICT) usage and provides a comprehensive outlook on e-learning in both virtual universities and organizations in Iran. A model for e-learning implementation is presented. This model tries to address specific issues in Iranian organizations.

Introduction

E-learning as instruction delivered on a computer by way of CD-ROM, Internet, or intranet (Clark & Mayer, 2008) is increasingly being diffused in corporate settings throughout the world. E-learning now accounts for nearly one-third of learning content made available. Although traditional classroom instruction is still being used, learning professionals are turning to technology to help streamline operations and deliver learning at less cost and with greater reach. The consolidated average for technology-based learning grew from 30.3 percent of learning hours made available in 2006 to 32.6 percent in 2007. The effects of e-learning on the profession have been dramatic, and all signs point to its influence for years to come (ASTD, 2008). According to IDC, the worldwide e-learning market reached $17.2 billion in 2008 (IDC, 2009).

There are several reasons behind this increase in e-learning usage in organizations. One of the most important reasons is e-learning cost-effectiveness. Deloitte Consulting Research argues that the overall development and deployment costs of e-learning have proven to be between 30 to 70 percent less expensive than traditional classroom training (cited in Van Dam, 2004).

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Table 1. Iran e-readiness ranking.

Country	Overall score	Connectivity and technology infrastructure	Business environment	Social and cultural environment	Legal environment	Government policy and vision	Consumer and business adoption
Iran	3.43	3.50	4.22	5.23	3.00	2.65	2.48

In addition to cost benefits, organizations prefer e-learning for its promises to: increase employee retention; rapidly develop, deploy, and update courses; provide effective training, available anytime and anywhere; boost worker productivity; broaden training opportunities; stay competitive; improve motivation and morale; and implement strategic initiatives (Aydin & Tasci, 2005).

In addition to the benefits of implementing e-learning, some experts warn managers about the adoption process of e-learning in their organizations. They point out that adopting e-learning without careful planning most likely ends with cost overruns, unappealing training products, and failure. They also state that like any other major innovation, e-learning strategies require considerable up-front analysis, development time, money, technological infrastructure, and leadership support to be successful (cited in Aydin & Tasci, 2005).

Furthermore, e-learning is a new concept in the training industry in Iran, and the Iranian business environment has unique attributes for e-learning implementation that may not be comparable to those in developed countries.

The research presented in this article investigated the Iranian business environment with regard to e-learning implementation. Interviews were used to collect the data from organizations. The article presents a model to help e-learning managers implement e-learning in their organizations so that they can get maximum benefits.

Current Status of ICT in Iran

Although using offline technologies such as CD-ROM for learning can be called e-learning, the capabilities of the Internet for providing two-way interactions between trainer and trainees and tracking students' online behavior make the Internet an important and useful tool for e-learning. Hence, determining ICT capabilities is important in developing a model for implementing e-learning.

There are divergent, well-known indexes for assessing countries' ICT condition, including e-readiness rankings by the Economist Intelligent Unit (EIU) and the International Telecommunication Union (ITU). For analyzing the Iran ICT condition, not only these indexes will be introduced briefly and the score of Iran will be presented in each of them, but also the upload and download speed of the Internet in Iran will be reviewed.

E-Readiness Ranking by EIU

Since 2000, the Economist Intelligence Unit has assessed the world's largest economies on their ability to absorb ICT and use it for economic and social benefit. Seventy countries are covered in the annual e-readiness rankings. E-readiness is a measure of the quality of a country's ICT infrastructure and the ability of its consumers, businesses, and governments to use ICT to their benefit. Over 100 separate criteria, both qualitative and quantitative, are evaluated for each country by the Economist Intelligence Unit's team of analysts. These criteria are scored on their relative presence (or lack thereof) in a country's economic, political, or social landscape. The categories and the individual criteria in each category are weighted according to assumptions of their relative importance in fostering a country's information economy (Economist Intelligence Unit, 2009).

The Scoring criteria categories include connectivity and technology infrastructure, business environment, social and cultural environment, legal environment, government policy and vision, and consumer and business adoption. Iran ranks 68th among 70 countries and received the score of 3.43 out of 10. The detailed statistics of Iran in the different categories are shown in *Table 1*.

Although the overall score gives an overview of a country's ICT condition, The "connectivity and technology infrastructure" and "social and cultural environment" categories are more related to e-learning adoption in a country. The connectivity and technology infrastructure is defined as the extent to which individuals and businesses can access mobile networks and the Internet, and their ability to access digital services through means such as digital identity cards. The social and cultural environment considers basic education as a population's Web-literacy—its experience using the Internet and its receptivity to it—and the technical skills of the workforce.

According to 2009 statistics, Iran's position in neither the connectivity and technology infrastructure indicator nor the social and cultural environment indicator is appropriate; however, the social and cultural environment is relatively better than in connectivity. This indicates that any model for implementing e-learning in Iranian organizations should strongly consider the technological and cultural issues in Iran.

DOI

The Digital Opportunity Index (DOI) has been designed by the International Telecommunication

1	Percentage of population covered by mobile cellular telephony
2	Internet access tariffs as a percentage of per capita income
3	Mobile cellular tariffs as a percentage of per capita income

4	Proportion of households with a fixed line telephone
5	Proportion of households with a computer
6	Proportion of households with Internet access at home
7	Mobile cellular subscribers per 100 inhabitants
8	Mobile Internet subscribers per 100 inhabitants

9	Proportion of individuals that used the Internet
10	Ratio of fixed broadband subscribers to total Internet subscribers
11	Ratio of mobile broadband subscribers to total mobile subscribers

Note: The indicators are averaged within each category and categories are averaged to obtain the Digital Opportunity Index value

Figure 1. DOI Index.

Union (ITU) as a tool for tracking progress in bridging the digital divide and the implementation of the outcomes of the World Summit on the Information Society (WSIS). As such, it provides a powerful policy tool for exploring the global and regional trends in infrastructure, opportunity, and usage that are shaping the Information Society. The DOI is a composite index comprising 11 separate indicators, grouped in three clusters of Opportunity, Infrastructure, and Utilization. Indicators for each category are shown in **Figure 1**. According to the 2007 report, Iran ranks 105th among 181 countries.

This indicates that access to the proper technologies for e-learning is not affordable enough for Iranian citizens, and the ICT infrastructure does not provide appropriate facilities for organizations if they want to get benefit from e-learning throughout the country.

Upload and Download Speeds

Speedtest.net is a broadband speed analysis tool that allows anyone to test their Internet connection. With the help of their one million tests every day, they provide top bandwidth speed by country. According to their data, Iran download speed ranks 187th and its upload speed ranks 176th in the world, with the speed of 0.48 Mb/s and 0.18 Mb/s, respectively.

In conclusion, according to e-readiness, DOI, and *speedtest.net*, Iran lacks proper connectivity and technological infrastructure, and these deficiencies need to be taken seriously into consideration when developing plans for e-learning.

E-learning in Iran

E-learning development in Iran can be analyzed in three different sectors: e-learning in higher education, corporate e-learning, and e-learning in technical and vocational training. Interviews with five e-learning practitioners have been done to shed light on the e-learning conditions in these three sectors.

Virtual Universities in Iran

Virtual universities in Iran were initially launched by major universities like the University of Tehran and the Iran University of Science and Technology. They began to offer some of their graduate and post-graduate degree programs online. The Iran Ministry of Higher Education accredited some completely virtual universities, which were mainly established to offer online degrees. Because of a shortage of higher educational services in Iran and great demand for entering the university, the virtual universities have experienced an increase in applications.

Online Vocational Training in Iran

The Iran technical and vocational training organization, affiliated with the Ministry of Labor and Social Affairs of Iran, was established in 1980. TVTO is officially responsible for implementing the short-duration technical and vocational training programs in Iran. It is also in charge of the special supervisory committee for the informal technical and vocational training which was formed by 16 ministries and organizations. Although it is a governmental organization, the TVTO provides its training services in both public and private sectors. TVTO began its e-learning initiative in 2002 by establishing a Website (*www. Ostadonline.com*) to offer free online courses mainly in the area of software skills. At its inception phase, the content presented by this site was completely static with no use of animation and voice. Gradually they began to offer more sophisticated content but all in the field of software skills. The e-learning in TVTO did not advance a lot until last year, when the organizational structure was updated and e-learning was given high priority. Since then, different initiatives regarding e-learning have been launched, including: developing a course for online trainers, developing a course to familiarize trainees with e-learning, and developing a course for managers of training institutions on e-learning. For offering online training, TVTO started to develop content for training programs *by outsourcing its content development activities.*

Corporate E-learning in Iran

E-learning in Iran was started by universities. When universities began to offer online courses, corporations realized the advantage of e-learning and tried to achieve the benefits from using online technologies in their training programs. The beginning of the corporate e-learning was by large corporations like banks and holding companies. Since there was no e-learning company to offer per user licenses, corporations started to install and implement e-learning software infrastructure like LMS and LCMS on their own, but they could not institutionalize e-learning through their organizations.

The main problem was that e-learning was seen as an IT project and IT departments took the lead of
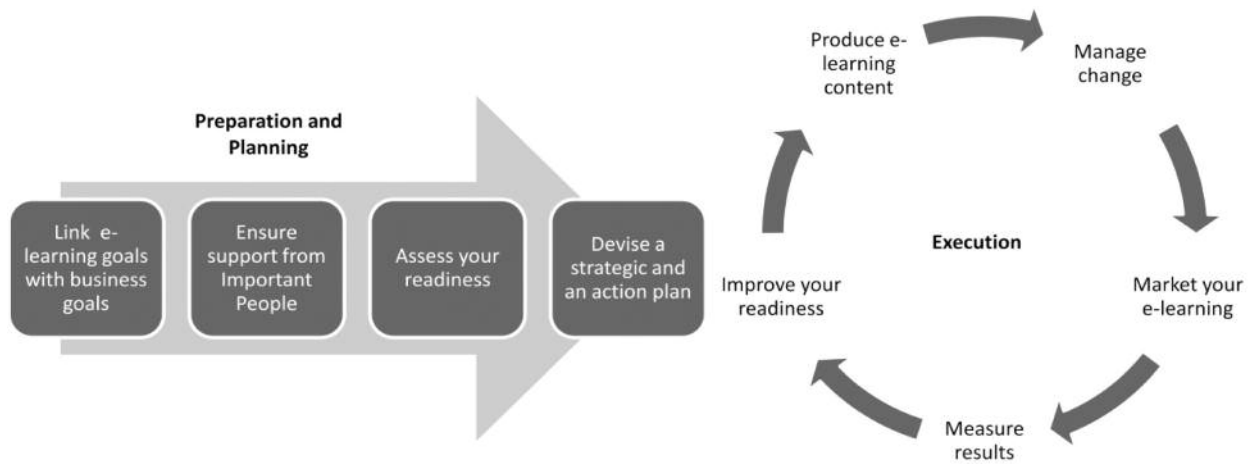
Figure 2. E-learning implementation model for Iran.

e-learning implementation without considering the e-learning as a change in organizational processes, which have to be properly managed to achieve benefits to the organization.

On the other hand, lack of skilled specialists in the e-learning field in organizations caused many failures in e-learning applications. Nowadays, organizations are more knowledgeable and there are a few e-learning companies which are offering online courses on license, as well as companies which have custom content development services; however, organizations still have difficulties in managing divergent aspects of e-learning like cultural, evaluation, marketing, and change management.

The E-learning Implementation Model

E-Learning in Iranian organizations needs to be managed according to the specific characteristics of the business environment in Iran. According to the facts mentioned in this article and interviews with five experts, major characteristic of Iran business environment regarding e-learning implementation are:

- Managers are not familiar with the e-learning concept.
- The concept of learning online is new to most employees.
- Training staff are new to the e-learning concept.
- Infrastructure (and mainly bandwidth) is a major problem.
- There are not clear roles and responsibilities for the IT and training department for e-learning implementation.
- Trainers do not have enough skills for delivering online courses.

To address the issues mentioned, an e-learning implementation model will be presented below.

The e-learning implementation model consists of two major phases, which are "Preparation and Planning"

and "Execution." Each phase also has some steps. *Figure 2* shows an overview of the model. Each phase and its steps are described below.

Phase 1: Preparation and Planning

Before offering e-learning courses to employees, it is important to ensure that the organization has the minimum requirement for e-learning. In this phase not only is it necessary to prepare the prerequisites, including a clear goal of e-learning and top management support, but also one should assess e-learning readiness and develop a strategic plan as well as an action plan to guide everyone through the execution phase.

Link e-learning goals with business goals. At the first step it should be determined how e-learning is going to help the organization to reach its business goals. Van Dam (2004) identified four aspects that shape the business value proposition for e-learning, including: reach, cost-effectiveness, business drivers, and diverse learner requirements. Without a clear link between e-learning goals and business goals, the initiative will become just a cost center for the organization and will not add any value. Training managers should tie their e-learning program to business problems and opportunities to make it beneficial for the organization.

Ensure support from important people. The most important person in any organization is the top manager. Without top management full support, no project could be successful, including e-learning. Key to gaining top management support for e-learning initiatives and projects is to integrate the evaluation and prioritization of those initiatives as an integral part of the organization's standard investment planning process (Van Dam, 2004). Explain the business drivers for e-learning, emphasizing those that meet the needs of senior managers (Morrison, 2003). It is not advisable to get in detail when you are persuading the top manager, since he or she is not interested in the detailed

technological issues; on the other hand, try to highlight the value that e-learning brings for the organization.

It is not possible to implement an e-learning project without the full participation of IT and Training departments. Without a robust and well-tested technology backbone to support e-learning content and learning management systems, e-learning initiatives would surely fail (Van Dam, 2004). On the other hand, without proper assessment of needs and a sound pedagogical plan, the best technological infrastructure will add no value to the organization. So, it is critical that both IT and Training manager work collaboratively together to make e-learning happen. To reduce conflicts between these stakeholders, one has to clearly define roles and responsibilities and ensure regular communication at all levels.

The next important people for the e-learning project are the people who are going to support the usage of the e-learning: line managers. They should be aware of the benefits e-learning can bring to their departments. Line managers have targets to meet—sales, production, service, and delivery. Their success or failure in meeting those targets depends on how well their teams perform. Continuous customized learning ensures that each individual works at peak performance.

Assess your readiness. Experts warn managers to be careful in the process of adopting e-learning for their organizations. They point out that adapting e-learning without careful planning most likely ends with cost overruns, unappealing training products, and failure. They also state that like any other major innovation, e-learning strategies require considerable up-front analysis, development time, money, technological infrastructure, and leadership support to be successful. Thus, managers should assess their companies' readiness for e-learning before adopting this innovation (Aydin & Tasci, 2005).

There are divergent models and tools to help organizations to assess their e-learning readiness. However, almost all of them are designed to be used in developed countries that have an advanced technological infrastructure and skilled and ready employees. To reflect the real view of e-learning readiness for Iranian organizations, this article suggest considering four dimensions as below:

- *Technological:* Existence of the appropriate technology infrastructure seems to be one of the critical components in every e-learning effort adoption. The two basic issues that should be considered to determine technology readiness for e-learning adoption are the degree of access to the Internet and the needed technology infrastructure (Borotis & Poulymenakou, 2004).
- *Cultural:* It is important for institutions to assess their institutional cultures by exploring learners' learning preferences, instructors' teaching prefer-

ences, and the existing learning culture (Khan, 2005).
- *Human resources:* This factor considers the availability of skilled human resources in training and IT department to run e-learning projects as well as the readiness of users to access the e-learning system and use it for learning purposes.
- *Structural:* This factor considers the availability of proper budgets for e-learning as well as the existence of designed processes for e-learning related issues. Although e-learning helps to decrease costs in training function, it requires a significant investment to initialize and maintain (Borotis & Poulymenakou, 2004).

Devise a strategic and an action plan. This step concludes the preparation and planning phase and will result in two specific deliverables, which are a strategic plan and an action plan. The strategic plan consists of the reasons, vision, and purposes of using e-learning in the organization; on the other hand, the action plan indicates the projects that should be done to make the organization ready to implement e-learning. These projects have been identified in the readiness assessment step. The e-learning team should give the project high priority and dedicate enough time and resources to each project to prepare for e-learning implementation.

Phase 2: Execution

The execution phase deals with the actual job of e-learning implementation. This phase consists of five steps, which can be repeated several times for delivering each e-learning program. These steps are described below.

Improve readiness. One deliverable of the last step of the preparation and planning phase was an action plan. Now, for running the e-learning, the first thing to do is to finish those projects in order to improve the organizational e-learning readiness to adopt e-learning.

Produce e-learning content. We should develop suitable e-learning content to offer to the end-users. Khan's (2005) P3 model—people, process, product—can help organizations to manage the process of content development. The people section indicates roles and responsibilities of the people involved in the content development. The process section explains a typical e-learning content development process, which has planning, design, development, evaluation, delivery, and maintenances stages. Product—the third section of the P3 model—refers to the deliverable of each stage of the e-learning content development process.

Manage change. Implementing e-learning is not just about getting people to actually use the e-learning. It is also about how to ensure that people internalize e-learning over the long term, and that depends on whether they believe in the value and purpose of e-learning and act accordingly over time. An effective

implementation program must move people from being able to understand the reasons why e-learning is something they should use to being ready, willing, and able to embrace the next wave of e-learning (Cross & Dublin, 2002).

E-learning is a big change in the way people are used to learning in an organization; therefore, a sound change management plan should be developed to institutionalize e-learning. The support of all of the individuals in each of the stakeholder groups is not necessary initially. Everett M. Rogers in his 1962 landmark book, *Diffusion of Innovations*, theorized that people adapt to new innovations (and change) differently but predictably. They form a bell-curve of innovators, early adapters, early majority, late majority, late adaptors, and laggards. Based on his research, we know that if 5 percent of each stakeholder group—the innovators—embraces the e-learning, it eventually will become embedded in the organization. But if 20 percent of each stakeholder group—the innovators and early adaptors—embraces the e-learning efforts, the change becomes virtually unstoppable. It is critical, therefore, that this 20 percent of each stakeholder group is identified and focused on; the others will follow (Allen, 2009).

Market the e-learning. In 2001, ASTD and the MASIE Center did a survey to analyze the acceptance of e-learning in organizations. The study concludes that full participation occurred when courses:

- had an internal champion;
- were tied to performance reviews; and
- had intense marketing and promotion.

The study found that managers must engage in at least four out of five of the promotional activities below:

- use testimonials;
- use formal means of communication;
- purposefully use managers/supervisors of learners to tell them about courses;
- inform people about training more than once; and
- have an internal champion.

Measure results. There is an old saying, "If you can't measure it, you can't manage it." In order to manage e-learning successfully, an organization has to measure its progress. This measurement should provide enough information to help organizations develop contingency plans in order to maintain e-learning.

There are two kinds of measures for e-learning assessment: activity measures and performance measures. Activity measures tell how much has been trained, whereas performance measures tell how well one has trained (Brandon, 2008).

Van Dam (2004) suggested an e-learning measurement framework based on the Donald Kirkpatrick and Jack J. Phillips framework. In his model, he introduces six levels of measurement, which are: participation, reaction, measurable outcomes, job application, business results, and return on investment (Van Dam, 2004).

It is not necessary to track all levels all of the time. In the early stages of defining an e-learning initiative, it is important to think through the measurement strategy. In some initiatives, one may decide to only focus on the first two levels. In other initiatives, one may focus on Levels 4 and 5 of the measurement framework (Van Dam, 2004).

Conclusion

E-learning has many benefits for organization, and its application has been increasing during the past several years in Iran. However, getting the most benefit from e-learning requires considerable up-front analysis. Without careful planning, e-learning would just be a cost center and will not contribute to organizational goals.

Considering the unique features of Iran's business environment, this article has presented a model to help organizations implement e-learning and get the most from it. This model has two phases, which are "Preparation and Planning" and "Execution." Each phase also has certain steps to follow. Iranian organizations may use this model as a roadmap for their e-learning implementation. Research studies should be conducted to determine whether the proposed model is effective. ☐

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Students' Perceptions of Online Learning

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This article presents a study that examined students' perceptions toward online practice and their developing attitudes toward the online learning process. The results indicated that both cultural background and personal qualities affect students' perceptions.

Introduction

Understanding of multiple perspectives of students in the online learning environment is a sensitive issue that needs to be considered for the success of virtual learners in the online learning process (Palloff & Pratt, 2003).

The literature has paid attention to the recognition of students' capability to construct their own knowledge in online learning according to their own preferred ways of knowing. The context and pedagogy for the online learning process need to consider both cultural and personal sensitivities in the instructional design of online courses (Bruyn, 2004; Kleinman, 2005).

The aim of the study reported herein was to explore students' perceptions in their online learning experiences. The following research questions guided the study:

- Q1: How do online students perceive the online learning experience?
- Q2: How do online students compare online learning and the classroom learning experiences?
- Q3: How do online students perceive the impact of culture in their online learning experience?
- Q4: To what extent do cultural, linguistic, and ethnic backgrounds challenge students' online learning experiences?

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Methodology

The research study is based on qualitative research (Bryman, 2004; Cohen, Manion, & Morrison, 2000). In-depth interviews were conducted with 12 online students, to seek their perceptions of the online learning experience. Online students participated in the research on a volunteer basis, from varied cultures, including Kazakhstan, Somalia, Jordan, Turkey, and Cyprus.

Research Findings

Perceptions of students of online learning. Student 1 defined online learning as a teaching program for mass learning in which many students can learn at the same time. Student 1 added that it is easy to study and understand the materials. Additionally, students defined online learning in many ways. For example:

- "A system for taking courses online through the Internet. It is a different way of communication between students and teachers."
- "Taking courses that allow using all kinds of multimedia. It is a new method of education in the world and helps many students to improve their knowledge and their skills."
- "Following all commands from the Internet to research and learn and to do many other things as well."
- "A complement to conventional classroom method."

Comparison between classroom learning and the online learning experience. Student 1 compared online learning and classroom learning by stating that online learning is a time-saving program. Student 1 stressed: "You do not need to wake up early morning and go to your classes and be a participant in the class. You can easily enter the Internet and do your course learning through the Internet, which saves time."

Student 2 stated: "Sometimes in the classroom, the good thing is, if you have a question, you ask. But, while online, you are almost on your own. Although you can access the teacher by e-mailing, I feel there is an advantage by being in the normal classroom setting."

Student 3 stressed the contrast between two kinds of learning (classroom vs. online).

Student 4 thought that online is the best for learning.

Student 5 stressed: "The classical method allows you to ask the teacher anytime directly while in the classroom, whereas, in distance education, it can be difficult, as one has to study alone, research alone."

Students 6, 7, 8, and 9 noted that the classroom method is more interactive, as one has the opportunity to interact with the teacher and students.

Students 10, 11, and 12 highlighted the effectiveness of classroom learning, because of interaction with teachers.

The impact of culture on online learning experience. Students considered culture as one of the fundamental

factors to perceive and experience the online learning process. Students indicated the impact of culture in many ways:

- "Cultural, linguistic, and ethnic backgrounds affect understanding within online learning experiences."
- "Cultural, linguistic, and ethnic backgrounds affect the ability of people to contact each other by using the Internet.
- "Culture can limit the understanding of students."

Challenges in online learning experiences. Students agreed that using the English language in online courses and having different cultural backgrounds create challenges that limit experiencing online course in a successful way. Students expressed challenges in online learning in many ways:

- "The main problem is language, which can be the factor that limits common understanding."
- "There are problems in communicating online because of cultural differences in common understandings."
- "Web page design might be a factor to minimize divergence of understanding."

Discussion and Conclusions

Research findings show that the transition from the classroom to the online environment affects understanding. Online courses require students to be self-responsible, self-motivated, and able to communicate with teachers and other students through the Internet with the support of the communication technology. The ability to perform well in this context is affected by both personal qualities and cultural background.

Establishing common understanding is an essential element within the online community. Personal qualities such as motivation, attitude, learning styles, gender, and previous online learning experiences are factors shaping the perceptions of individuals, as are cultural differences. These factors need to be integrated to minimize differences among learners in order to make sure that online programs are successful (Meyer, 2002; Palloff & Prattt, 2003; Salmon; 2004). ☐

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Epilogue to Special Issue

Badrul Huda Khan

In my personal and professional interactions with people from all over the world, despite diversity in our cultural and political views, I have found that all of us care genuinely about many common things. With regard to education specifically, I have found in my conversations with educator colleagues around the globe that all are intensely curious about new approaches which they can use in their own teaching practices. All of us are interested in sharing information and knowledge to enhance our ability to function well in our professional lives.

Conflicts that prohibit mutual sharing serve as barriers to progress in the world. In an information society, disagreements across national borders should not stop educators from collaborating on mutually beneficial projects. I know that educators in the Middle East are eager to work with each other, despite a diversity of existing political views among various governments. One such example that I witnessed recently was a group of Israeli educators meeting with Pakistani and Turkish colleagues on collaborative projects in online education. This occurred at the 2nd International Symposium on Computer and Instructional Technologies held in Turkey.

I have been collaborating for some time with many educators throughout the Middle East, and some of them have worked closely with me in translating my e-learning book into editions published in Arabic-speaking countries, in Israel, and in Iran. Differences in views on non-educational matters have been set aside, as colleagues in the field have been enthusiastic about participating in collaborations aimed at the continuous improvement of our educational systems.

This special issue of **Educational Technology** on ICT and e-learning in the Middle East germinated from my hope to expand even further the sharing of information and knowledge, leading to a better future for all of us. ☐

Badrul Huda Khan, a Contributing Editor, is Founder of **McWeadon.com** (a professional development site) and **BooksToRead.com** (a recommended readings site) on the Internet. He is an international speaker, author educator, and consultant in e-learning and educational technology (e-mail: **dr.khan@McWeadon.com**).

John M. Keller

A Significant Contributor to the Field of Educational Technology

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Greg Francom
Thomas C. Reeves

…motivational design aims to enable the dream of educators, other behavioral change agents, and managers of human performance to stimulate and sustain people's efforts to make positive changes in their lives. More specifically, it refers to the process of arranging resources and procedures to bring about changes in people's motivation. Consequently, motivational design is concerned with connecting instruction to the goals of learners, providing stimulation and appropriate levels of challenge, and influencing how the learners will feel following successful goal accomplishment, or even following failure. (Keller, 2009, p. 22)

John M. Keller has been central in helping educational technology refocus on motivation as an important element of any learning situation. Reacting to inadequacies in both behaviorist and cognitive theories of learning to account for learner motivation, Keller developed a comprehensive motivational model that synthesized and integrated prior motivation theory, research, and practice. Concluding that motivation was educational technology's neglected "heart" (Shellnut, 1996), Keller (1979) created an enhanced theoretical foundation for explaining learner motivation, a concise and accessible list of motivational concepts and strategies, and a systematic motivational design model for improving motivation to learn. His ARCS model (Attention,

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Relevance, Confidence, and Satisfaction) is a central reference for many efforts to improve learner motivation. Recently, Keller (2009) has built upon his previous work to develop an integrative theory of motivation, volition, and performance to better explain the dynamic interrelationships between motivation, learning, and achievement.

Brief Biography

After graduating from high school in 1956, John Keller briefly attended college and then joined the marines in 1957. Keller was assigned to an aviation wing, responsible for flight simulator procedures. After his military service, Keller enrolled in college and graduated with a bachelor's degree in Philosophy with a minor in English from the University of California, Riverside in 1965. In 1971, after six years of teaching high school in California, Keller began his doctoral studies at Indiana University. He completed his Ph.D. in 1974 with a major in instructional systems technology and minors in organizational behavior and research and evaluation. Keller's dissertation focused on locus of control and learned helplessness, constructs which were foundational for his interest in motivation (Keller, Goldman, & Sutterer, 1978).

After receiving his Ph.D. in 1974, Keller became an assistant professor in the Area of Instructional Technology at Syracuse University. While at Syracuse, Keller consulted for a variety of business, education, and government clients on learning and instructional issues, and began developing ideas on motivation in learning situations, which would ultimately lead to the ARCS model of motivational design (Keller, 1979, 1983). While at Syracuse, Keller became an Associate Professor in 1979, and served as Chair of the Division of Instructional Design, Development, and Evaluation for the Syracuse University College of Education from 1983–1984.

In 1985, Keller accepted a position at Florida State University (FSU) as Associate Professor of Instructional Science and Technology. He became a full Professor in 1988 and also served as a Program leader for the Instructional Systems Program at FSU from 1990–1992 and 1996–2003. In the first years at FSU, Keller continued to publish seminal works on the ARCS model of motivation and conduct research on its use (Keller, 1987a, 1987b; Visser & Keller, 1990). He also continued to provide consultation on a variety of business, government, and academic learning issues for clients, including IBM, the Florida Department of Education, Citibank, the Federal Aviation Administration, and Samsung Corporation. Throughout his career, Keller has continued to focus on research, theory, and practice in the area of motivation. Currently, Keller is a Professor at FSU's Department of Educational Psychology and Learning Systems, where he is recognized as an outstanding teacher, incorporating many of the elements of his ARCS model into his teaching practices. Professor Keller has mentored numerous graduate students at both Syracuse and FSU.

Keller has received many awards, including the Outstanding Young Researcher Award from the Association for Educational Communications and Technology in 1975, Encore Presenter at the National Society for Performance and Instruction in 1987 and 1989, best article of the year in *Performance & Instruction*, 1989, Instructor of the Year,

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1989–1990, at Florida State University, and a Distinguished Alumnus Award in 1992 from the Instructional Systems Technology Program at Indiana University. Professor Keller has published four books, scores of book chapters and refereed journal articles, and has been an active participant and presenter in organizations such as the Association for Educational Communications and Technology, the International Society for Performance Improvement, and the American Educational Research Association.

Major Contributions

Keller is best known for his work on motivation to learn. His ARCS model (Keller, 1987a, 1987b) was a reaction to inadequate attention to learners in instructional settings and more specifically the lack of understanding about how to influence motivation to learn (Keller, 1979). Keller (1983) criticized instructional design models as overly focused on consequences and stimuli in the environment and showed that ultimately behavior is a function of the person and the environment. Keller referred to his work on the motivational design of instruction as a macro-theory, combining a wide range of theoretical bases derived from social learning theory, field theory, self-efficacy theory, and other motivational theories (Keller, 1983). Prior to Keller's work, there was no comprehensive theoretical framework that could fully explain or illustrate how to foster learner motivation (Keller, 1979). The goal of Keller's work has been to provide an enriched theoretical basis for understanding motivation in learning, offer an overview of motivational concepts found in research and practice, and provide systematic ways to positively influence learner motivation (Keller, 1983, 1987a).

Keller's careful synthesis of theory and practice yielded the ARCS model (Keller, 1987b), which provides: (a) four main motivational concepts and instructional strategies within each concept; and (b) a model for analyzing, designing, developing, and evaluating motivational strategies in an instructional situation (Keller, 1987b). The ARCS model asserts that learners have individual differences with regard to motivation, which should be taken into account if possible (Keller, 1983).

As illustrated in *Figure 1*, the four main motivational concepts in the ARCS model are Attention, Relevance, Confidence, and Satisfaction. Attention refers to directing and sustaining learners' attention to appropriate learning materials.

Keller offers several strategies for gaining and sustaining learner attention, including creating incongruity or conflict in information or events, expressing examples and visuals in concrete ways, varying presentation, media, format, and interaction styles, introducing humor in a lesson, supporting inquiry, and requiring learner participation (Keller, 1987b).

The Relevance concept of the ARCS model deals with the perceived relevance of subject matter to learners. Strategies for increasing the perceived relevance of subject matter include relating what is being learned to learner prior interest or experience, stating the present worth of the subject matter, relating subject matter to future experiences that learners may have, matching student needs to instructional strategies, modeling enthusiasm for the subject matter, and providing learners with meaningful choices

Motivational Concept	Motivational Strategies
Attention	• Incongruity and conflict • Concreteness • Variability • Humor • Inquiry • Participation
Relevance	• Experience • Present worth • Future usefulness • Need matching • Modeling • Choice
Confidence	• Learning requirements • Difficulty • Expectations • Attributions • Self-confidence
Satisfaction	• Natural consequences • Unexpected rewards • Positive outcomes • Negative influences • Scheduling

Figure 1. Motivational concepts and strategies (Keller, 1987b).

for learning (Keller, 1987b).

The Confidence concept in the ARCS model refers to a learner's level of confidence that he or she will succeed. Highly confident individuals may decide to persist in learning, while those will low confidence may easily give up. Keller (1987b) suggests making learning requirements clear to students, organizing materials to gradually increase difficulty level, helping learners to expect success, attributing learner success to effort, allowing learners to become more independent in learning activities, and practicing tasks in realistic settings as strategies to increase learner confidence.

The Satisfaction concept in the ARCS model refers to how learners feel about their accomplishments. Satisfaction deals with appropriately rewarding learning performance based on extrinsic and intrinsic motivation. Satisfaction strategies include providing positive natural consequences for learning, providing students with unexpected rewards for learning, giving learning feedback and praise, avoiding negative influence on learning, and scaffolding the frequency of reinforcements based on learner experience with a task (Keller, 1987b).

In addition to the motivational concepts, the ARCS model provides a motivational design process that can be used to help improve the motivational appeal of instruction and address motivational problems. As illustrated in *Figure 2*, this process has 10 steps in its latest version, focused on motivational design of instruction (Keller & Suzuki, 2004). This motivational design process features analysis, design, development, and evaluation phases.

Analysis	Step 1: Obtain course information	Course description and rationale Setting and delivery system Instructor information
	Step 2: Obtain audience information	Entry skill levels Attitudes toward school or work Attitudes toward course
	Step 3: Analyze audience	Motivational profile Root causes Modifiable influences
	Step 4: Analyze existing materials	Positive features Deficiencies or problems Related issues
	Step 5: List objectives and assessments	Motivational design goals Learner behaviors Confirmation methods
Design	Step 6: List potential tactics	Brainstorm list of tactics Beginning, during, and end Throughout
	Step 7: Select and design tactics	Integrated tactics Enhancement tactics Sustaining tactics
	Step 8: Integrate with instruction	Combine designs Points of inclusion Revisions to be made
Development	Step 9: Select and develop materials	Select available materials Modify to the situation Develop new materials
Evaluation	Step 10: Evaluate and revise	Obtain student reactions Determine satisfaction level Revise if necessary

Figure 2. The ARCS motivational design process (adapted from Keller, 2008).

In the Analysis phase (steps one through five), motivational gaps are determined in both the instruction and the students. Step one involves gathering information about the course, including reviewing the course description, delivery system, and instructor. Step two involves obtaining audience information, including entry skill levels, attitudes toward school/work, and attitudes toward the course in particular. These elements of the model provide the motivational designer with a baseline to further analyze learner motiva-tional levels and needs (step three). Analyzing the audience (step three) should lead to a description of the motivational problem that must be addressed. Step four, analyze existing materials, involves determining the motivationally positive and deficient features of current instructional materials. The combination of learner motivation analysis and existing materials analysis should help the motivational designer determine gaps in the motivation between desired and existing motivational states and their causes. The final step in the Analysis phase of the ARCS motivational design process includes listing objectives and assessments. This step yields a list of motivational objectives for a course and enables building assessment tools aligned with the objectives.

The Design phase of the ARCS motivational design process has three steps that involve the designer in selecting, designing, and integrating motivational tactics. In step six, the designer makes a list of different tactics that could be used to fill learner and instruction motivational gaps (as determined in the analysis phase). In step seven, the designer chooses tactics from among those listed that are appropriate to the situation, including tactics for integrating, enhancing, and sustaining motivation in a course or curriculum. The potential and selected tactics (steps six and seven) are strategies that can be chosen from the motivational concepts in the ARCS model (strategies to enhance attention, relevance, confidence, and satisfaction). The last step of the design phase (step eight) is to integrate the chosen motivational tactics into the instruction. This process of integration might involve combining motivational design elements with instructional design elements and revising the original instruction.

The Development phase of the ARCS motivational design process includes selecting and developing motivational materials (step nine).

In the Evaluation phase, the motivational designer evaluates and revises the motivational design (step ten). This is done by obtaining student reactions to the new motivational design and determining student satisfaction level. This information can be used to inform any necessary revisions to the motivational design.

Much of Keller's work after the creation of the ARCS model has focused on validating the model in differing situations as a way to improve the motivational appeal of instructional materials and improve learner motivation. The ARCS model has been used and validated in many geographically and culturally diverse settings (Keller & Suzuki, 2004). It has been applied in distance education and online learning (Keller, 1999), computer assisted instruction (Song & Keller, 2001), multimedia learning (Deimann & Keller, 2006), and in a variety of other settings and technologies (Keller & Suzuki, 2004).

Conclusion

In addition to the specification of concise motivational concepts and a motivational design model, Keller continues to contribute to the field of educational technology. For example, his seminal 1983 chapter on the motivational design of instruction has been cited more than 750 times in refereed journals, magazines, books, dissertations, and other publications. His most recent work moves toward the

creation of a model of learning that takes into account motivation, volition, and performance (Keller, 2009). This work represents an attempt to combine environmental and psychological influences on learners to better explain the dynamic interrelationships between motivation, ability to sustain action toward a goal, and performance in learning settings (Keller, 2008).

Keller's work continues to be a major influence in the field of educational technology in business and industry, academia, and government. Undoubtedly, the ARCS model of motivational design, combined with his new theory of motivation, volition, and performance, will continue to influence practitioners and researchers concerned with motivation to learn for many years to come. ☐

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Q & A with Ed Tech Leaders

Interview with Penny de Byl

Michael F. Shaughnessy

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1. You have addressed some of the problems of implementing new technologies in university settings. What do you see as the main problems?

The main issues are technical support/infrastructure and teacher apprehension. Policies need to be put in place to provide computing infrastructure and technical assistance to the early technology-adopting teachers. For example, a

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number of universities today, such as the University of Southern Queensland, have a purpose-built Technology Enhanced Learning classroom where lecturers can try out new technologies.

2. Let's talk about integrating easy-to-use Web3D e-learning. Why would Web3D be so attractive and pedagogically sound?

The motivation is to bring richer learning objects to students. Our world is in 3D, and if you examine an artifact and are allowed to hold and manipulate it, it adds to one's understanding. For students who cannot examine an object in real life, a virtual 3D representation is the next best thing. While a simple video of a real-world object will give a 3D perspective, it does not allow for real-time interaction. Web3D allows students to interact in real time with objects and to examine their properties.

3. What is your ALIVE project?

The ALIVE project began in 2005. It originally stood for Advanced Learning and Immersive Virtual Environments, and the first project was to develop an online 3D virtual community for students. The team then moved onto developing 3D serious games for university students. As my research directions have moved on, I've renamed the acronym so the 'A' stands for "Augmented."

4. What are some of the challenges that Web3D presents for novices?

The single biggest challenge with 3D environments, Web3D, or games is developing content. Applications require 3D models, and any interaction and animation requires knowledge of 3D mathematics. It is actually a very time-consuming activity.

5. What is DXStudio and how does one learn to use it?

DXStudio is a rapid game development tool. It can be downloaded from *http://www.dxstudio.com/* . It has a visual interface that allows developers to drag and drop their way to high-quality 3D environments. It is an excellent tool for those wanting to explore how to make their own 3D games and Web3D applications. The DXStudio online library has over 600 3D models that can be used by developers for free, of which about 100 odd were contributed by the ALIVE team members.

6. What are the challenges in merging 3D and 2D learning?

2D information really suffers in a 3D environment. Unless the viewer is looking at the 2D object straight on, it can be difficult to see and read. Take, for example, 2D text pasted on a board in a 3D environment and viewed from the side. It's more difficult to comprehend than if you were in the same situation in the real world because of the way the 3D environment pixelates the image. Too often learning content which is most efficient in 2D is translated into 3D with little, no, or much less benefit to the learner. The challenge is to understand when 3D is best and when just to leave it alone.

7. What is a Dollylink and when would one be used? And why?

A dollylink is a hyperlink on a Webpage which controls and moves a 3D object on the same page. Say, for example, you have a Webpage which illustrates the human skeleton. There may be a 3D window with a virtual skeleton and some text on the page explaining it. Within the text you may refer to different bones, such as the femur. When the reader clicks on the word femur, it can be made into a dollylink, which moves the camera in the 3D view such that the femur bone becomes the focus.

8. Why would one want to "create an emotional space for intelligent agents"?

This is going back some years. One research area in computer science and artificial intelligence is Affective Computing. This examines how artificially intelligent agents (which includes computer controlled game characters) could detect emotions in humans or generate their own emotions. My research in this area looked at the latter. Essentially, I designed an architecture (called an Affective Space) which allowed a game character to assess the current situation, generate an emotional response, and then act on that response. The character would essentially learn what situations it "liked" and ones it didn't. In the future, it would try and avoid situations it didn't like.

9. How do we go about "giving an agent an attitude" and why would we want to?

This relates to the work above. When humans make some decisions, they do it not by assessing all possible variables but through summary information. This is the way we often make judgments using stereotypes (whether they be wrong or right). Most times we summarize information and situations by saying we like or dislike them. We tend to gravitate towards what we like. These are attitudes towards other people or events. And they can change over time. For example, we may dislike a new colleague because of something a friend told us, but after interacting with this colleague, our attitudes change. The same construct is used in the Affective Space to allow game characters to make judgments based on what they perceive as liked or disliked.

10. What is your six-dimensional paradigm for generating emotions in virtual characters?

This is the Affective Space spoken about above. It includes six orthogonal dimensions: pleasantness, anticipated effort, certainty, attentional activity, responsibility, and control, across 15 emotions: happiness, sadness, anger, boredom, challenge, hope, fear, interest, contempt, disgust, frustration, surprise, pride, shame, and guilt.

11. Why do we want to program believable characters for computer games?

The more believable a computer game character is, the more challenging and real a game experience feels. When developing games, the creators want the players to enter into a state of suspension of disbelief, which makes them believe they are really living the game. It's like being really engrossed in a movie. Game characters have been notoriously difficult to program because they just don't act like real humans do, and when they present with erratic or unpredictable behavior, they can break the suspension of disbelief for the player. The player may lose interest in the game.

12. What is the current status of the ALIVE project?

The ALIVE project is now focusing on developments in Augmented Reality. Rather than embedding 3D worlds behind the computer screen, I am now looking at ways to bring 3D virtual objects and games into the real world and to

allow students to interact naturally with one another and the augmented content rather than being fixed to a keyboard and screen.

13. Tell us about your "online assistant for remote critiquing of electronically submitted assessment."

This is a project I began working on in 1995. It was an online assignment submission system which managed electronically submitted assignments and allowed an academic team to grade the work and have the grades and feedback automatically returned to the student. The system was entirely electronic and reduced double handling of student results. The system reduced assignment turnaround times from 2–4 weeks down to 3–7 days.

14. What role does emotion play in online avatars and gaming characters?

Humans act emotionally. Emotional states influence our assessment of situations and out behavior. To create truly believable game characters, we need to have them react to situations such that the player believes they are an emotional being.

15. What is an "affect appraisal" and why is it important?

An affect appraisal is the process whereby intelligent agents assess their situation according to the six dimensions of the affective space and generate emotional responses.

16. Who has influenced/mentored you?

The first person I can think of that influenced my work in Affective Computing was Rosalind Picard of MIT (who also wrote the book titled *Affective Computing*). Her ideas on the importance of emotions in artificial characters helped point the way for my initial research. More recently, my motivation to gravitate towards Augmented Reality in learning has been influenced by Eric Klopfer (who wrote the book *Augmented Learning*). His ideas have caused me to think about educational technology beyond online virtual worlds and Web3D. My mentors include my Ph.D. supervisors Dickson Lukose and Mark Toleman, who really taught me to write and publish often; and, finally, also my good friend, Professor Lynne Hunt, who has strengthened my belief in myself and my work. Of course, I can't forget my husband, Daniel, and daughter, Tabytha, who help me keep my feet on the ground and remind me daily why I do what I do.

17. What are you currently working on or researching?

Augmented Learning, as mentioned.

18. Why is it important that we "embrace the next generation of Web technologies"?

Technology is moving at a breakneck pace. Students pick up these technologies in an instant. Teachers are seen as somewhat old fashioned. In order to engage today's students, we need to understand the space they live in and talk to them on their level. The Web and Mobile Technology is where they are at..

19. What have I neglected to ask?

Where can I get more information? Here are some resources:

- *http://www.aliveed.com*
- *http://www.youtube.com/aliveteam* ☐

Educational Technology Classics

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Teacher Education and Educational Technology

Carl J. Lange

The concept of "teacher" may be altered in the future, with the development of more definitive positions being required by the operation of instructional systems and by their design and management.

Some of these positions may be highly specialized. For example, three major types of jobs are generally seen as needed: (1) the system designer, (2) the system manager, and (3) human components in the instructional systems. These several roles vary considerably in terms of the qualifications required.

In educational systems of the future, decisions about job positions should be based on appropriate systems analyses as to how job duties are allocated to the personnel subsystem. One might envision a career progression in education which would involve initial job experience at a lower echelon in the system, return for formal schooling, and progressive movement to higher-level jobs in a much more complex fashion than is presently the case for transition from teacher to administrator.

To be sure, such change is likely to be evolutionary rather than revolutionary, but the job of the teacher can no longer be seen as static and unchanging if improved educational technology, the changing needs of society, and needs of individuals are to have their fullest possible impact.

In the more immediate future, one can expect continuing efforts directed both at improving the teacher in the more traditional classroom role in direct interaction with students, and at developing new roles for teachers in the use of innovations from educational technology.

Perhaps the most likely prediction for the future is that the teacher will play a greater multiplicity of roles than in the past. The conventional role of the teacher is being

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studied intensively by those using interaction analysis techniques, which involve observation of the teacher performing in he classroom setting. There appears to be a growing consensus that a critical area for future work is the careful analysis of the tasks to be performed by teachers in systems using such innovations as non-graded classrooms, programmed instruction, CCTV, and computer assisted instruction.

Analysis is also needed for such older innovations as team teaching. In addition, analyses are needed on those aspects of the teacher's job which are not directly involved in the instructional process—for example, the teacher's duties in staff utilization, broadly defined to include interacting with teacher aides, school psychologists, guidance counselors, health specialists, etc. Also assuming increasing importance is the role of interacting with parents.

Anticipated Changes in
the Role of the Teacher

One of the main trends in educational technology is to develop components of the instructional system that will in part replace the function of the teacher in carrying on the instructional process. For example, programmed instruction and the computer will be used to present information, ask questions, and respond to students' behaviors. The general objectives of such innovations are to individualize instruction to accommodate differential student aptitudes and interests, and to increase student participation in the learning process.

In these circumstances, the role of the teacher will change to an emphasis on diagnosis of pupils' strengths and weaknesses, prescription of instructional tasks, individual assistance to students, and guidance. In addition to these practices, which will place greater demands on teachers, there should be an increased use of small-group discussions and of games and simulations, all of which will require interpersonal skills and understanding of social processes.

The requirement for individuals in an increasingly complex society to participate effectively in groups engaged in problem solving, decision making, and negotiating represents a significant need that should be met by education. Providing educational experiences relevant to this need might well represent as significant a trend for the future teacher as the shift to manager of instructional systems.

The description and analysis to create the job activities required to carry out these new roles presents one of the important challenges to educational research and development in the future.

Design of Teacher Education Programs

If teacher education programs are to be relevant for preparing teachers in the knowledge and skills as described and analyzed in job models, considerable emphasis will need to be given to the practice of skills in the curriculum.

The instructional objectives derived from the knowledge and skills required for job performance frequently will be in terms of skills that are needed. This increased emphasis on skills that would follow from a systems approach to developing programs for teachers is consistent with current interest in micro-teaching, mini-courses, interaction analysis as a teaching tool, and simulation

However, as stated earlier, the creation of new teacher roles required to accommodate innovations from educational technology will represent additional objectives to be met by teacher education programs.

Thus, an important step in curriculum development of teacher education programs to meet future needs will be creation of instructional objectives relevant to these new roles. The creation of such objectives presupposes the formulation of the necessary job model which describes and analyzes the job functions and related knowledge and skills.

Systems-Designed Programs
for Professional Ends

In order to introduce changes in teacher education, it is likely that programs of instruction must be developed to achieve a specific set of objectives derived from analysis of the job. Such "packages" are commonly objected to as being "teacher proof" and as usurping the role of the instructor; also, the emphasis on the practice of job-related performance is frequently perceived as craft oriented— a trend toward mere technician training and away from professional development

These criticisms can be rejected as not applicable if programs of instruction are developed to provide adequate practice of performance in the full range of knowledge and skills required.

Such programs will place greater demands on the instructor to serve as a resource person and to react in a much less structured situation than in the usual classroom lecture approach. The student along with the instructor will be faced repeatedly with the challenge of applying concepts of education to significant problems of today. □

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Looking Ahead Looking Back

Denis Hlynka

Technomongering

The word "monger" is used to refer to a person who promotes or "hawks" a product. Sometimes, the product is legitimate (e.g., fishmonger, cheesemonger), but more often than not, the term has a negative connotation. A warmonger is one who promotes the idea of war and encourages aggression. A rumormonger is one who spreads rumors. A scaremonger is one who intimidates and bullies.

There is no such word as *technomonger* in the *Oxford* or *Webster* dictionaries. But if there were, it would be a person who hawks technology. To "hawk" is to sell a product by shouting about it. Today we shout not just with our physical voices but we also extend our voices through technology.

Technomongering…if there were such a term (and there is not)…would develop through several groups with vested interests.

One such group might include those commercial companies that have an educational product to sell. The stress is not on *a* product, but *their* product. Those companies, if one could imagine such, would believe that the bottom line is simply and exclusively profit. They would believe that their technology is clearly the best. And that their next year's product will be new, improved, and even better. It is fortunate for us that no word like technomonger is needed to describe such practices. If the word does not exist, we can assume that such practices do not exist either.

Another group would be those academics whose research agendas set out to prove *that* technology in the classroom makes a difference, rather than the more neutral question of *whether* technology makes a difference. One need only read between the lines to see such hidden agendas. But if the word technomonger does not exist, neither can the symptoms exist, so we may relax.

A third group might be comprised of those school administrators who want their school to be the best by having the best. Such schools would boast a computer for every student, a high-speed Internet connection for all, Smartboards to replace chalkboards, and *Facebook* pages in which each and every student has hundreds of "friends." The tell-tale signs of such an approach would probably be lists of competencies and standards and specified learning outcomes. Teachers are told they must demonstrate these standards…by next year, or else. There would be standards for teachers, and would-be standards for students. The next step would be standards for administrators. As one administrator confidently told me, "There is no digital divide…in my school division."

A fourth group that would suggest the existence of a technomonger would be the *teachers*, specifically those teachers who are onto everything technological. These individuals, were they to exist, would focus on *how* to do things, rather than on any substantive content.

A fifth group of technomongers would consist of those individuals who scare us by telling us that we are not good enough. The kids know more than we do; they are comfortable with technology while we are not. A good trick used by these kinds of technomongers is name-calling: Those who do not immediately conform are called luddites, technopeasants, slow adopters, or dinosaurs, or any number of similar negative epithets. In philosophy, the term for this kind of attack is "ad hominem." Attack the person, not the cause. Extending the term, technomongering would be another kind of cyberbullying.

A final group of technomongers is us. This is not a surprise to our 21st century mentality. YouTube advertises the possibility that anybody, even YOU, can post any video for the world to see. *Time* magazine's famous "person of the year" cover for 2008 was not a person; it was everyperson; it was YOU. Wikipedia is an encyclopedia created by everyone. And if the focus is not YOU, then it is ME. That is, we belong to the me-generation, where everyone is told that they are special and can be everything and anything, as long as they want it bad enough and work hard enough. With technology, everyone can be a writer; everyone can be a publisher; everyone can be a producer. Yet, as a Gilbert and Sullivan character in the *Gondoliers* once remarked, "When everyone is somebody, no one's anybody."

Society is full of warnings that belie the technomongering model: "All that glitters is not gold," "Don't judge a book by its cover," "Don't believe everything you see." The 1950 Hollywood film *The Crimson Pirate* opens with Burt Lancaster (as the Crimson Pirate) speaking directly to the audience as a kind of prologue: "A pirate ship in pirate waters, in a pirate world. Believe only what you see…No, believe only half of what you see." In other words, there is nothing new here. Common sense should prevail. We have always known that.

When we push or hawk educational technology for the sake of the technical, above all else; when we engage in scare tactics instead of careful analysis; when we express pride in our latest expensive technological toys; when we fall for the trap that McLuhan warned us about that the "medium is the message," then we too become technomongers.

Educational technology can be wonderful, exciting, and incredibly useful. But it is not automatically so. We don't need bandwagons; we need thoughtful analysis. We don't need technomongers; we need explorers.

Fortunately, words only exist when they have a meaning. The dictionary has no meaning for technomongering. There is no such word. Lucky for us. There is clearly no problem.

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Book Review
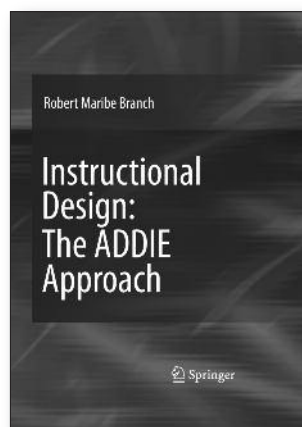
The ADDIE Approach to ID Process Explained

Book Review:
Robert Maribe Branch.
Instructional Design: The ADDIE Approach.
Springer; 203 pages; 2009; $69.95.

Reviewed by James D. Russell

This book is a well-written introduction to the instructional design process. It presents the fundamental principles of instructional design though the ADDIE model. The steps in the ADDIE Model are Analyze, Design, Develop, Implement, and Evaluate. The ADDIE approach can be adapted to practically any development context. It guides the developer through the instructional design process. It is goal oriented, active, and helps to generate instructional strategies.

This book explains the concepts, theories, and practices of the ADDIE Model. The book is descriptive, shows relationships among the components, is interactive, and also explains when not to use instructional design to solve performance problems. Instructional design can close the gap between actual performance and desired performance only when there is a lack of knowledge or skill.

The author, Robert Branch, is Professor and head of the Educational Psychology and Instructional Technology Department at the University of Georgia. He has taught ID courses at the University of Georgia and at Syracuse University.

The audience for the book is entry-level instructional designers and students who wish to be better prepared to create training and education materials through an understanding of the ADDIE process. The book could be the textbook for an ID class or for an individual learning about the instructional design process.

James D. Russell, *a Contributing Editor, is Professor Emeritus of Instructional Research and Development at Purdue University. Before his retirement, he taught instructional design for 37 years at Purdue and at Florida State. He is co-author of* **Instructional Technology and Media for Learning** *now in its 9th edition (Pearson/Merrill Prentice Hall, 2008) and the 3rd edition of* **Educational Technology for Teaching and Learning** *(Pearson/Merrill Prentice Hall, 2006) (e-mail: jrussell@purdue.edu).*

The book is organized with a prologue, a chapter on each step of the ADDIE model, and an epilogue. There are two appendices, a glossary, and a very complete bibliography. A helpful touch is the tables of contents at the front of the book and at the beginning of each chapter. The prologue provides an excellent overview of the ADDIE process and the organization of the book. A chart at the beginning of each chapter highlights what is covered in that chapter.

Each chapter begins with a table of contents, abstract, and keywords before the introduction to that phase. The book concludes with an epilogue that summarizes the ADDIE model. Appendix A is a practice case that provides an opportunity for the reader to practice different procedures associated with ADDIE, while constructing a solution for a performance problem. Appendix B provides 35 multiple-choice questions with answers to review the content of the book. The glossary contains over 100 key terms from the text. The bibliography includes about 70 references for books and book chapters along with over 50 articles. The index at the end of the book is very helpful.

The strengths of the book include helpful definitions and explanations. Valuable examples and practice activities are included. The book is written with a minimum of professional jargon. Chapter 1 includes a well-written review of Bloom's Taxonomy and its application to instructional design. Comprehensive chapter summaries include a list of key components resulting from that phase. The summary also justifies the importance of each step and substep. Many helpful and realistic examples are included. Thought-provoking exercises provide for application of what was just presented. Branch practices what he preaches here—presentation of content, inclusion of examples, followed by exercises. Key concepts, background theory, and valuable practice are included for all main topics. For each step of the model, a complete sample case is presented first as an example and then the reader is asked to complete an open-ended case.

Having taught instructional design for nearly 40 years, my concerns about the book are the lack of complete lists of objectives for each chapter and no feedback for the practice activities. For each step there is a general objective, such as "Generate learning plans" (page 85). I feel there should be more than one objective for each section of content. In addition, the existing objectives do not include the three components (performance, conditions, and criteria) as specified by Branch in the book. Well-stated objectives are important for *all* learners, including the users of this book.

The chapters include good practice opportunities, but no feedback is provided for these practice activities. One principle of good instruction is practice followed by feedback. The lack of feedback is a serious shortcoming for the individual reader who is learning instructional design alone.

This is not a complete how-to-do-it book. It lacks in-depth investigation of many important topics. For example, just two pages are devoted to how to compose objectives and one page to generating testing strategies. In comparison, almost 13 pages discuss selecting and developing media. The Branch book should be supplemented for the individual reader who plans to apply the model. The instructor in a course could provide what is missing from the book for his or her students.

Overall, the book includes an adequate exploration of the ADDIE approach to instructional design, which has a proven record of success. □

New Issues, New Answers

Marc Prensky

What a School District CTO Should Know

More than just technology, he or she needs to know what's going on

I often hear complaints from teachers that their district's Chief Technology Officer (CTO, or whatever similar title he or she has) blocks too many things, or doesn't allow certain technologies like cell phones to be used. I also hear from CTOs and others that their "hands are tied" by federal and other legislation, or by district policies set by others.

Clearly not all CTOs set policy regarding access to technology, nor should they ever by themselves. Policy should be a product of dialog among all the relevant parties—administrators, parents, the school board, teachers, technology people, and (although they are rarely consulted) students.

Every district, or even school, should be able, in consultation with all those parties, to determine the policies that are best for it. Those policies should probably be reevaluated at the beginning of each school year to take account of changing students, changing technology, and changing thinking.

Information on Access Policies

To do that however, all the parties need information, because the truth is that policies on access vary widely from district to district, even within the same state (and sometimes between schools within a district). There are districts that block everything, and districts that block very little. There are districts that don't permit students to access YouTube at all, districts that allow selective access,

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and districts that don't see blocking it as their role.

There are schools that allow teacher discretion in allowing cell phone use in class, schools that give students specific times when cell phones can be used, and "zero-tolerance" schools that allow no discretion at all.

There are places where loud sirens go off if a student (or teacher) tries to access a blocked site (e.g., the Chicago Public Schools) and places where the responsibility to turn off the computer if something inappropriate appears on the screen rests solely with the students. And the policies may vary according to which students one is talking about.

Responsibilities of the Chief Technology Officer

It seems to me that one of the primary responsibilities of the CTO, whatever the policies in their district today, is to inform themselves about, and make available proactively to the other interested parties, information on the entire spectrum of policies in their region, state, and in the country as a whole.

Who has the most restrictive policies and why? How are they working? How do the teachers and students feel about those policies? Who has the least restrictive policies and why? How do the school boards and administrators justify those policies? What do the parents say? What is the real incidence of serious problems, as opposed to the over-reported or imagined?

In addition, the CTO should become fully informed on what districts and schools are using laptops or other 1:1 devices, how are they funding them and what results they are seeing; who has district-wide wi-fi to all schools and to all student homes? How has this been funded? Quite a few of the best solutions are due less to the availability of funds and more to the creativity of the CTO.

Yearly Discussions in Each District

It would be extremely useful if such information could be compiled each year by each district's CTO. CTOs of different districts could make short statements on video justifying their own policies, all posted to one place.

The data compilations and videos could then be shared and used by the interested parties (again, administrators, parents, the school board, teachers, technology people, and students) as they hold their yearly policy discussions and set their yearly policies.

The time of the "imperial CTO" whose only policy considerations are "no surprises" and "cover my (our) rear(s)" should now be over. It is not the teachers who should be coming to the CTO saying "but this other district does it differently" (they rarely know with certainty). It is the wise CTO who should be laying out all the alternatives and helping his or her district find the best course for learning.

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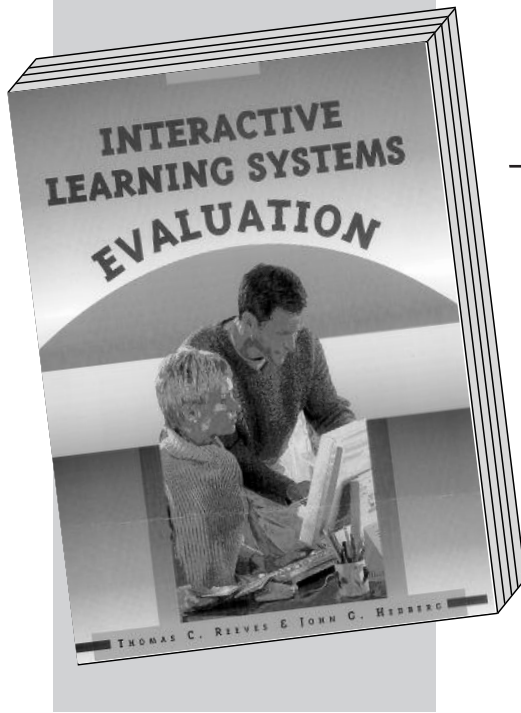
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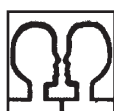
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