

Editorial: Technology integration and adoption in education and the community

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Welcome to Volume 5 Issue 2 of the International Journal of Education and Development using Information and Communication Technology (IJEDICT). In this issue we have articles on or from: Australia, Brazil, Cameroon, Kenya, Malaysia, Tanzania, USA. As is often the case, most of the articles are about education.

Four of the articles deal with technology integration and adoption in schools. In the Project Sheet "The Computers for Education Forum COF Working with 57 schools in rural Cameroonian Schools (Ngoketunjia, North West Region, Cameroon)", Palamakumbura describes COF - a framework of 3 partners and 57 schools extending across 7 villages in rural Cameroon. The objective of the framework is to bridge the digital divide through education. As its first phase of activities, the program will run 12 monthly seminars for school teachers. Of the participants 51 schools (89%) do not currently teach computing. Of these 42 schools will introduce computing as a subject through the program. To facilitate this, the program will invite 5-10 teachers from each school to participate in the program and as such will be training 200-400 teachers.

Junqueira's article "Brazilian Teachers' Agency in a Web-based U.S. Reform Project" presents the results of a qualitative study about teachers' participation at the enactment of a U.S. web-based learning project aiming to reform Brazilian public schools by advancing the meaningful use of digital technologies at public schools. The analysis was conducted along theories of agency (including the concepts of fields, resources, schemas). Results indicate teachers' agency as a key element in the reform enactment given the lack of other resources (technology availability, training, funding). Teachers engaged with the project as they understood the need for action and change, but it is not clear how far teachers' dispositions to do so would endure given the dilapidated structure of public schools in Brazil.

The article "The conditions and level of ICT integration in Malaysian Smart Schools" by Wan Ali, Mohd Nor, Hamzah and Alwi describes a qualitative study of the conditions that facilitated the implementation of Information Communication Technology (ICT) integration in the Malaysian Smart School and the problems that emerge during the process of integration. A total of twenty-one informants were interviewed. Based on data analysis two sets of conditions were revealed. They were the essential conditions and the supporting conditions. The findings also revealed that teachers in this study employed four levels of approaches in integrating ICT in the schools. Time, course content and technical malfunction were found to be the main problems that the teachers faced during this process.

Although teachers are aware of the importance of technology integration into daily process of teaching and learning, they tend to face a number of barriers when it comes to effectively integrating technology into their curricula. While some barriers are resource related, others originate from fundamental beliefs and processes of current education system. In the Literature Review "Effective Technology Integration: Old Topic, New Thoughts", Su first demonstrates why a systemic change is needed for effective technology integration in Kindergarten through Grade 12

(K-12). Then, by reviewing the relevant literature on barriers to technology integration, she points out the most fundamental barriers. Finally, the stages of change that individuals tend to go through in the context of K-12 technology integration is discussed.

Three of the education articles are concerned with the specifics of using the computer in teaching. In their article "A Problem-based Approach to Accounting Education: Pragmatic Appraisal of a Technologically Enabled Solution", Wilkin and Collier describe and justify a 'new pedagogy' that centres on realistic business problems in the context of a simulated business and its authentic enterprise system. The aim is to prepare accounting students for a broader role in business decision making by providing them with relevant robust usable knowledge. Using design science methodology the authors describe three approaches to create artifacts that involve use of an enterprise system which support this proposal. The authors' contribution is an appraisal of these approaches. Included are examples of applying the pedagogy that demonstrates its feasibility.

This research work described in "Development and validation of a computer instructional package on electrochemistry for secondary schools in Nigeria" by Oyelekan and Olorundare, was carried out to develop and validate a computer instructional package on electrochemistry for secondary schools in Nigeria. Several researchers have indicated electrochemistry to be one of the topics responsible for students' poor performance in School Certificate Chemistry examinations in Nigeria. The package was produced in an html format using Macromedia Dreamweaver as the overall platform. Other computer programs utilized during the development process are: CorelDraw suit 12, Microsoft Word 2003, Macromedia Fireworks 8, and Macromedia Flash 8. The validation of the package was carried out in accordance with the recommendations of Dick, Carey, & Carey (2005). In the end, the package was found to produce a very good performance level in the students when used for electrochemistry instruction.

Two of the education articles deal with systemic issues. The Education Management Information System (EMIS) plays a significant role in helping the education policy-makers, decision-makers, and managers in Malaysia to make timely and good decisions. This requires high quality data to be made available to relevant people. However, EMIS has been plagued with data quality problems. The study described in the article "Data Completeness Analysis in Malaysian Educational Management Information System" by Mohamed, Nik Abdul Kadir, Yap, Abdul Rahman and Arshad aims to measure the EMIS data completeness using custom tools and to identify possible causes for EMIS data quality problems. Analysis indicates that EMIS data completeness has achieved the desired level of completeness targeted by its developers. Practical suggestions for improving the quality of EMIS data collection are presented.

Originally developed for delivering distance learning programs, e-education systems in their current forms are powerful, web-based information systems with capabilities that match Enterprise Resource Planning (ERP) systems. By carrying out their deployments on an enterprise-level basis, many Higher Education Institutions (HEI) are able to leverage on their powerful functionalities and ERP-like integrative capabilities to put together academic and administrative systems. In their article "e-Education Systems Implementation Success Model", Yahya, Habibah Arshad and Wahab maintain that it may no longer be relevant to evaluate e-education systems as only educational technologies in view of the current implementation environment where new forms of e-education systems are now information systems of strategic relevance in many HEI (Moul 2002). E-education systems should therefore be studied as: mainstream information systems, i.e. within the paradigms of information systems evaluation research and no longer as educational technology or innovation. This study looks into information systems success model that can be developed to explain and predict the success of e-education systems implementation. It identifies constructs to measure e-education systems implementation success; investigates the appropriate dependent variable as a proxy for e-education systems

implementation success and finally develops and validates the model.

For more than a decade, development partners have been advocating the application of Information and Communication Technology (ICT) as a tool for poverty alleviation in developing countries. Various approaches have been suggested and implemented in various countries including Kenya. Using the data from National Small Medium Enterprises Baseline Survey 1999 and Economic Survey of 2002, 2003, 2004 and 2005 among others, the Literature Review by Gatana Kariuki - "Growth and Improvement of Information Communication Technology in Kenya" - examines the performance of the ICT sector against national policy objectives. The Invited Article by Wanjira Kinuthia "Educational Development in Kenya and the Role of Information and Communication Technology" is a Literature Review that provides the historical, economic, political and socio-cultural context for the use of ICT in education in Kenya. The article concludes that ICT must become part of the delivery and content of education in Kenya otherwise the knowledge divide will deepen, but the failure to use ICT is itself a result of the digital and knowledge divides that exist, and their causes are deeply embedded in the complex historical and socio-cultural context of the country.

Two of the articles are not specifically about education. "Analyzing the usage patterns and challenges of telecenters among rural communities: experience from four selected telecenters in Tanzania" by Mtega and Malekani, is about telecenters in Tanzania. The objective of this study was to examine use patterns, challenges and way forward for effective beneficial use of telecenters in Tanzania. The study covered the following four telecenters, namely Kilosa, Mpwapwa, Kasulu and FADECO (Family Alliance for Development and Co-operation) telecenters. It was found that the studied telecenters in Tanzania are still at infancy and most do not offer adequate information to communities living in rural areas. Most are still faced with a number of challenges that make it difficult to meet people's expectations. It was concluded that so as to meet their objectives, telecenters should provide information relevant to people's needs, and different formats should be used to present information as people have different information searching skills.

A number of community-based information and communication technology (ICT) for development initiatives, both within Australia and in South Asia have benefited from the application of a form of action research. "Action Research Practices and Media for Development" by Tacchi, Foth and Hearn describes and discusses the rationale, practice and implications for wider uses of what they term Ethnographic Action Research (EAR). EAR is similar to Participatory Action Research (PAR), with three key distinctions or characteristics that the authors elaborate on in this article. Firstly the 'ethnographic' refers not only to the key tools or methods that are used (none of which are exclusive to EAR), but to the 'ethnographic approach' that is a fundamental plank of EAR, and the way it is both integrated into the development of media initiatives and is ongoing. It is designed to build the capacity of media initiatives themselves to monitor and evaluate and consequently to alter practices as part of their ongoing development, with the EAR researcher being a member of the media initiative team, most usually with other roles and responsibilities within the initiative itself. Secondly, it works with the conceptual framework of the 'communicative ecology', which involves paying keen attention to the wider context of information and communication flows and channels - formal and informal, technical and social - and, monitoring both opportunities for intervention and the changes that result. Finally, they use media itself as a tool for action research: for exploring issues in a community as well as archiving, managing and collecting data and facilitating online networks of EAR researchers.

The emphasis in IJEDICT is on providing a space for researchers, practitioners and theoreticians to jointly explore ideas using an eclectic mix of research methods and disciplines, and we welcome feedback and suggestions as to how the journal can better serve this community. And we always need more reviewers, so please volunteer - send an email with a brief CV indicating

your qualifications, work experience and research interests.

Remember to check the Navigation Bar on top of the journal website and click on “DLDC Website” to get to the rewritten Distance Learning in Developing Countries website - http://members.tripod.com/stewart_marshall/index.html. As ever, the issue also brings more postings to the journal blog: “CEDICT: Communication, Education and Development using ICT” - <http://cedict.blogspot.com/> - also accessible from the Navigation Bar.

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