

POLITICS OF ICT INTEGRATION IN SECONDARY SCHOOLS IN NIGERIA PROBLEMS AND PROSPECTS

Ihie Eru Joel

Department of Educational Foundations
College of Education, Oju

Jemimah Ogi

Department of Primary Education Studies,
College of Education, Oju

Jones Ikpe

Department of Educational Foundations,
College of Education, Oju

Abstract

Information and Communication Technology (ICT) has become inseparable entities in all aspects of human life. The use of ICT has fundamentally changed the practices and procedures of nearly all forms of endeavor within business, governance, education and civil service. There is universal recognition of the need to use Information and Communication Technology (ICT) in education as we enter the era of globalization where the free flow of information via satellite and the internet hold sway in global information dissemination of knowledge. Already, Nigeria is on the other side of the international digital divide, as it has not made significant effort to integrate ICT into secondary school curriculum. A great deal of instructional and administrative work in secondary school in Nigeria is still carried out manually. This paper, therefore, examines the major obstacles and politics militating against the use of ICT in secondary education in Nigeria. It identifies poor funding of computer hardware and software, weak infrastructure, lack of adequate human skills and knowledge in ICT, and lack of relevant software appropriate and culturally suitable to Nigeria. In modern society, Nigeria needs ICT to aid teaching and learning and educational management. ICT is an instrument for the economic and technological development in the 21st century; therefore, Nigeria cannot afford to be on the other side of the digital divide.

Keywords: *Politics, Integration, ICT, Problems and Prospects.*

<p>CORRESPONDING AUTHOR Ihie Eru Joel</p>

Introduction

Information and Communication Technology (ICT) has become, within a very short time, one of the basic building blocks of modern society. ICTs have successfully changed the social, economic and political spaces globally. Through globalization, ICTs have reduced the world to a global clan. Globalization has assumed a cyclopean force driving human civilization by the scruff (Imhonopi & Urim, 2013). The role of ICT in teaching and learning is rapidly becoming one of the most important and widely discussed issues in contemporary education policy (Thierer, 2000). Most experts in the field of education agreed that, when properly used, ICT would hold great promise to improve teaching and learning in addition to shaping workforce opportunities. Poole (2006) has indicated that computer illiteracy is now regarded as the new illiteracy. This has actually gingered a new and strong desire to equip schools and colleges with computer facilities and qualified personnel necessary to produce technologically proficient and efficient students in developed countries of the world. ICT is changing the world rapidly, creating a distance- less and borderless world of instantaneous communication (Spence & Smith, 2009).

In the more advanced industrialized nations, there has a staggering amount of research and publication related to ICT use for educational purposes during the past decade. Today, nearly all the industrialized nations have access to ICT and have purchased computers for school use to aid learning (Harper, 2010). Becker (1986) carried out a comprehensive survey of the instructional uses of computers in United States public and non-public schools. The survey report suggested that over one million computers were in America elementary and secondary schools and that more than fifteen million students used them during 1985. The report further says half-a- million teachers used computers during the same period. Also, over 8500 elementary schools owned 15 or more computers. It has been almost three decades since the figures quoted above were released. There is no doubt that those figures would have increased tremendously since then. US government made available \$529 million to schools out of which 60-70 percent was spent on computer education. However, in the US administration's fiscal 2011 budget, more than \$900 million was earmarked for educational technologies (Hess & Leal, 2011).

In Britain, the story is the same as the wider availability of computers in schools was made possible through government funding largely through the local Educational Authorities (LEA). Visscher et al (2010) reported that following the Education Reform Act in 2008, the central government made available \$325 million, over time, to promote the use of computers in school administration and management. Just as the United States and Britain have been budgeting huge sum of money for cyber/ICT education, so have other developed countries been doing same. In Africa, concerted efforts have been made by many governments to initiate internet connectivity and technology training programs. Such programs like schools around the world in order to improve education, enhance cultural understanding and develop skills that youths need for securing jobs in the 21st century. In Uganda, an interconnectivity programme known as "Uganda School Net" is dedicated to extending educational technology throughout Uganda (Carlson & Firpo, 2011). In Senegal, teachers and students are using computers extensively as information tools. These programs in African countries mentioned above are supported by the government through ministries of Education.

In a rapidly changing world of global market competition, automation and increasing democratization, basic education is necessary for an individual to have the

capacity and capability to access and apply information. Such ability and capability must find bearing in information and communication technology in the global village. The Economic Commission for Africa has indicated that the ability to access and effectively utilize information is no longer a luxury but a necessity for development.

Information and Communication Technology Policies in the Nigerian Education System

Nigeria, as a nation, has recognized the potential of information and communication technology in the school system. This is evidenced in the educational policies aimed at integrating the use of ICT, particularly the computer, in the Nigerian school system. The first national programme was the Federal Government 1988 policy document, National Policy on Computer Education (FRN, 1988). The document emphasized the need for primary school pupils to be introduced into basic computer skill, the use of the computer to facilitate learning and rudimentary use for text writing, computation and data entry. For secondary schools, the goals were as identified for primary schools, but to be pursued at a higher level. The additions were the organization of curriculum for secondary school students on computer education and the decision to use the unity schools as the pilot institutions for computer education. The tertiary institutions were also required to teach computer science as a subject discipline and also integrate in school administration and instruction. Other components of the document include; equipment requirement, teacher training and specific recommendation in different tertiary institutions. However, the implementation was not effective due to politics.

The National Policy on Education (FRN), as revised in 1998 and 2004, re-emphasized the technology into the school system. This is an acceptance of the need to go beyond computer to the level of ICT and also the need for infrastructure. However, the first holistic attempt at introducing ICT in all facets of the country's life was the approval by the Federal Government of a national policy on ICT. The Nigerian national policy for information technology (FRN, 2001), recognized the need for ICT to be used for education and three major objectives amongst several objectives emphasized the need to:

- Empower youths with ICT skills to prepare them for competitiveness in a global environment;
- Integrate ICT into the main stream of education and training and
- Establishment of multifaceted ICT institutions and as centres of excellence on ICT.

The document specifically noted the need for "Restructuring the education system at all levels to respond effectively to the challenges and imagined impact of the information age and in particular, the allocation of a special IT development fund for education at all levels" (P.4).

To achieve these objectives, nine major strategies were outlined, these include: making the use of ICT compulsory at all educational institutions, developing of ICT curricular for all levels of education, using ICT in distance education and ICT companies' investment in education. Others include giving study grant and scholarship in ICT, training the trainers' scheme for Youth Corp members on ICT, ICT capacity building at the zonal, state and local government levels, establishing private and public dedicated ICT institutions and working with international and domestics' initiatives to transfer ICT knowledge. However, Yusuf (2011) noted in his analysis of the Nigerian national policy for information technology (FRN, 2001) that the policy was inadequate for

positive impact on the Nigerian education system. This, he noted, stems from the fact that the philosophical frame of reference is market driven and that there is little emphasis on the integration of ICT in instruction. In addition, strategies outlined in the document were not followed.

Another significant document on ICT was the Federal Ministry of Education (FME, 2004) Ministerial Initiative on e-Education for Nigerian Education System. Unlike the previous documents, the initiative was drawn based on input from major educational and human development commissions and board (National Universities Commission, National Colleges of Education Commission, National Board for Technical Education, Education for all, Universal Basic Education, etc). However, the document could not be implemented because the Minister who initiated the document was removed. Thus, signally the death of the document which was meant to leapfrog the Nigerian educational institutions into ICT compliant ones. Since then, no national document had been developed on the integration of ICT in Nigerian educational institutions.

Politics of ICT Integration in Nigerian Schools

Political bodies, over the years, have forced education planners to include certain concepts or ideologies in the curriculum of schools and colleges. Education and politics are related in a circular fashion. On the one hand, schooling influences the formation of political norms and values and provides one of several qualifications needed by political office holders; on the other, educational policy public controversies over certain policies involve political processes (Lassa, 2014).

The need to integrate information and communication technology into the Nigerian secondary school system may appear too simplistic and unnecessary. However, the political conditions in Nigeria for the past thirty years leave no room for continuity. Over the years, political power in Nigeria has been used to entrench mediocrity, corruption in high places, misplace priority and consumer culture. The direct effect of these is a battered economy and an educational system that is decaying by the day. In 1988 for instance, in an attempt to keep pace with development in computer education, Nigeria enacted a policy on Computer Education. According to Okebukola (2007), the plan was to establish pilot schools and thereafter diffuse the innovation, first to all secondary schools and then primary schools. Unfortunately, beyond the distribution and installation of computers in the Federal Government Colleges, the project did not really take off the ground (P.16).

Okebukola (2007) concluded that computer is not part of classroom technology in over 90% of public schools in Nigeria. Thus the chalkboard and textbooks continue to dominate classroom activities in most secondary schools in Nigeria. If a country such as Uganda which has less than a-fifth of Nigeria's resources, is now integrating information and communication technology to help secondary school students to become better information users, why is Nigeria lagging behind?. The answer is simply mismanagement of the huge resources of the country and inability of political leaders to prioritize Nigeria's development needs. There is no doubt that in the current harsh economic competition, the private sector in Nigeria has embraced ICT to stay afloat. The banking sector, insurance, manufacturing industries and multinational companies in the oil sector have embraced multimedia technology to bring innovative solutions to their current challenges.

If Nigerian wants to be a major player in the global market place of ideas, knowledge and prepare her citizens for the new environment of today and the future, she should integrate ICT as a basic skill and concept as part of the core of education, alongside reading, writing and numeracy (UNESCO, 2012). Indeed, ICT have permeated the business environment, underpinned the success of modern corporations, strengthened value chains for e-governance. Additionally, ICTs add value to the processes of learning and organizes and manages teaching-learning process across the spectrum. ICTs have been reported to have played a great role in redefining education across the continuum. It has brought massive regeneration and invigoration to teaching, learning and enhanced teacher-student interface by creating multiple channels of interaction (Agbetuyi & Oluwatayo, 2012).

Haphazard planning and politicization of educational system have been the bane of the educational sector. We often hastily make educational policies without calculating the long-term effects and implication of such policy formulations. Irrespective of ill-motivated policy which made states and the Federal Government to nationalize and monopolize the entire educational system, Nigeria should embrace ICT for the following reasons: ICT as aids to teaching and learning; ICT as a tool for management; ICT as instrument for economic development, ICT as instrument of high technological development and ICT as a course of study.

Integration of ICT into teaching and learning secondary schools

The importance of ICT is quite evidence from the educational perspective. Though the chalkboard, textbooks, radio/television and film have been used for educational purpose over the years, none has quite impacted on the educational process like the computer. While television and film impact only on the audiovisual faculties of users, the computer is capable of activating the senses of sight, hearing and touch of users. ICT has the capacity to provide higher interactive potential for users to develop their individual, intellectual and creative ability. The main purpose of ICT “consists just in the development of human mental resources, which allow people to both successfully apply the existing knowledge and produce new knowledge” (Shavinina, 2011, P.70). the collective and rigid nature of learning and the passive nature of the learning associated with the use of television and film do not contribute any innovative changes to traditional methods in education system. Information and communication technologies are being used in the developed world for instructional functions. Today, computers perform a host of functions in teaching as many nations are adding computer literacy, reading and writing literacy as skills students will need for succeeding in a technologically developed world (Thomas, 2007). At the instructional level, computers are used by students to learn reading mathematics, social studies, art, music, simulation and health practices.

There is no doubt that ICT provides productive teaching and learning in order to increase people’s creative and intellectual resources especially in today’s information society. Through the simultaneous use of audio, text, multicolor images, graphics, motion; ICT gives ample and exceptional opportunities to the students to develop capacities for high quality and to increase their ability to innovate. Nigeria cannot afford to lag behind in using multimedia to raise the intellectual and creative resources of her secondary school students. This is particularly important for children whose adulthood will blossom in a cyber environment entirely different from that of the present. Nigerian students need to be taught by radically new educational programme and variety of educational contents with multimedia playing key role (Nwosu & Ogbomo, 2011).

Integration of ICT into Educational Management

It is uncommon to find that many establishments in Nigeria, including educational institutions, still keep records in files and tucked them away in filling cabinets where they accumulate dust. Many of these files are often eaten up by rodents and cockroaches thus rendering them irretrievable. A great deal of routine administrative work in government establishments is still done manually with the State and Federal government showing little or no interest in embracing ICT. The official administrative drudgery in government offices and educational institutions can be better managed through ICT. Educational administrative functions include a wide variety of activities such as educational governance, supervisor, support services, infrastructure, finance, budgeting, accounting, personnel selection and recruitment, training system monitoring and evaluation, facilities procurement and management, equipment maintenance, research and so on (Thomas 2007).

In most Nigerian schools, officials still go through the laborious exercise of manually registering students, maintaining records of students, performance, keeping inventory list of suppliers, doing cost accounting, paying bills, printing reports and drawing architectural designs. The huge man-hour spent on these exercises can be drastically reduced with ICT to enhance overall management procedure. Thomas (2007), affirmed that “computers bring great speed and accuracy to each of these tasks, along with convenience of storing large quantities of information on small disks or tapes” (P.5). The prevailing condition in school management in Nigeria is disheartening and discouraging. The country seems to be living in prehistoric times in the educational management while even developing countries in Africa such as Kenya, Uganda and Tanzania are far ahead of Nigeria in ICT applications and integration. Despite its huge material resources and population endowment, Nigeria cannot be counted among progressive nations using ICT in educational management of secondary education, as technology has become a critical tool for achieving success in education.

ICT as a course of study

The most challenging aspect of the post-industrial era is how to meet the demand of the information society that modern man is trying to build. The role of education in developing modern society cannot be overemphasized. In fact, society and education are highly interdependent. As society changes, the educational system has to change accordingly (Westera & Sloep, 2011). Today, employers of labour are in search of graduates with requisite knowledge, skill and training that would help solve problems that would help solve problems that do not yet exist today. In recent years, thousands of university graduates found it difficult to secure good paying jobs. This has been due to the fact that there are no jobs out there as many government establishments and private companies are even downsizing workers as a result of hard times being experienced by the economy. Though the Nigerian government has opened its doors to foreign investors and many of them are coming in, Nigerian graduates are not properly trained for the new positions Elluh (2013) that are opening up in the new companies being established. There is high demand for highly skilled and technologically trained workers. Unfortunately, most Nigerian graduates acquired overdose of theoretical knowledge, which does not match well with the demands of workplace practice. Modern companies need employees that are proactive, enterprising, responsible and self-reliant professionals. According to Walton (2005), modern employees represent the business’ human capital.

In order to revolutionize Nigeria educational system, the country needs ICT not only as tools for communication, but also as a field of study. Modern companies, especially those operated by new foreign investors need skilled workers with basic knowledge in algorithm, flow chart design, complex programming and web design. Nigeria also needs computer technicians and engineers. These new fields of study could be introduced as areas of study in Nigeria tertiary institutions.

Problems militating against ICT integration in secondary schools in Nigeria

There are several impediments to the successful use of information and communication technology in secondary schools in Nigeria.

- **Poor funding:** This has remained a tall obstacle for robust and effective secondary school education in Nigeria. Nigeria has over 6000 public secondary schools, but majority are short of books, paper and pencils. Many of the schools lack adequate infrastructure such as classrooms and only a few are equipped with television or radio. Granted that funding education in an economy, whether developing, is expensive, in Nigeria, secondary education has received several knocks from the establishment as the government has failed in its commitment to invest heavily in the subsector. While government claims it suffers from paucity of funds, it is amazing when one considers the expensiveness of governance in Nigeria which if tamed, could free funds for investment in education. According to Imhonopi and Urim (2012), Nigeria has remained shamelessly scandalous in the area of the expensive cost of managing the democratic structures of the state and the people that run them. This is because of the entrenched corruption at that centre down to the constituent states and local authorities, the multiplication of government ministries, departments and agencies, the bloated civil and public services, the self-approved jumbo pays and perks for members of the executive and legislative branches. A restructuring of the entire governance structure in Nigeria, with focus on reducing cost of governance, will be a step in the right direction.
- **Lack of skills:** This is a notable problem facing secondary education in the country. Nigeria does not only lack information infrastructures, it also lacks the human skills and knowledge to fully integrate ICT into secondary education. To integrate information and communication technology (ICT) in secondary schools in Nigeria, the need for locally trained personnel in application software, operating systems, network administration and local technicians to service and repair computer facilities. In Nigeria also, most secondary school teachers lack the skills to fully utilize technology in curriculum implementation hence the traditional chalk and duster approach still dominates in secondary school pedagogy. Information transfer using ICT is minimal or non-existence in secondary schools in Nigeria (Anao, 2013). Secondary school teachers in Nigeria need to be trained on educational technologies and the integration of computers into classroom teaching to raise the level of teaching in required subjects and improve student learning (P.109).
- **Lack of infrastructure:** This is a formidable obstacle to the use and integration of information and communication technology in Nigerian secondary schools. Computer equipment was made to function with other infrastructure such as electricity under “controlled conditions”. Nigeria currently produces less than 4,000 megawatts of electricity which is incredibly insufficient to meet the needs of Nigerians across all sectors, including the education sector. Since ICTs are powered directly and/ or indirectly by one form of energy or the other, correcting the Lexis

(2012) asset flaws/challenges inherent in the power sector and regenerating the sector to meet the needs of a modern state which will provide the needed boost for ICT integration in secondary education in Nigeria.

- **Lack of relevant software:** This is another obstacle that frustrates ICT integration in secondary schools in Nigeria. There is no doubt that the ultimate power of technology is the content and the communication. Though software developers and publishers in the developed countries have been trying for long to develop software and multimedia that have universal application, due to differences in education standards and requirements, these products do not integrate into curriculum across countries. Software that is appropriate and culturally suitable to the Nigerian education system is in short supply. There is a great discrepancy between relevant software supply and demand in developing countries like Nigeria. According to Salomon (2014), there are clear indicators from many countries that the supply of relevant and appropriate software is a major bottleneck obstructing wider application of the computer. Even if Nigeria tries to approach this software famine by producing software that would suit its educational philosophies, there are two major problems to be encountered. First, the cost of producing relevant software for the country's educational system is enormous. Second, there is dearth of qualified computer software designers in the country. To overcome this, people need to be trained in instructional design.

Prospects for the use of ICT in teaching and learning in schools

Akpa (2014) opined that there are numerous and good prospects for the use of ICT in teaching and learning in secondary schools in Nigeria. The following major areas suggested the range of applications that computer can serve teachers and learners in Nigeria:

- Firstly, computer can enhance educational efficiency. The efficiency in teaching various subjects could be improved. For instance, many secondary school teachers are already teaching large classes of students. In this situation, students no longer receive the most desired individual assistance. Furthermore, English language is taught and learned as a second language in Nigeria and many teachers of English are weak. It is possible to use carefully prepared computer programs to ensure that learners are accurately and systematically instructed. Also, the computer can enhance problem-solving skills of the learners by focusing on thinking skills especially in subject such as mathematics.
- Secondly, computers can serve administrative functions. They can replace the labourious exercise of filing papers in filing cabinets and shelves where records accumulate dust over a long period of time. Another administrative application of the computers is their use for budget planning, accounting for expenditure, writing correspondences and reports, assigning student classes, reporting students' progress and testing students and scoring tests which help to reduce paper work. It is true that many of the tasks above are not effectively and efficiently done in secondary schools in Nigeria.
- Thirdly, computers can be used for individualized learning in secondary schools in Nigeria. Due to large classes and differences in individual learning style and pace, microcomputers will enable the students to progress at his/her own pace and receive continual evaluation feedback and corrections for errors made. In this way, computers allow the development of partner- like interactive and individualized

relations with user. Computers play the role of the tutor and present the learner with a variety of contents and symbolic modes.

- Fourthly, computers can change current pedagogical practices in secondary schools in Nigeria, which depended heavily on the traditional lecture method. It is universally accepted that computers allow more independent exploration, more personally tailored activities, more team work and more significantly, less didactic instruction. The role the teacher, therefore, changes from information dispenser to that of information manager; from authoritative source of information, to a guide of self-propelled explorative (Smith, 2010).
- Fifthly, computers will offer the Nigerian teacher improvement in the techniques of research. The cumbersome exercise of searching by hand through the library's card catalog or periodical indexes can be made easier by typing into a computer and the researcher can receive extensive list of related sources of articles in books and journals in just a matter of minutes.

Conclusion

There is no doubt that teachers and students in secondary schools in Nigeria will have incredible resources available if they have access to the internet. By integrating information and communication technology into secondary school curriculum, a fundamental shift in the way teacher teaches and students learning will be evolved. However, to integrate computer into teaching and learning in Nigeria, there must be paper and adequate funding and financing of education. There has been a steady decline in government's budgetary allocation to education over the past number of years. Without a doubt, ICTs will continue to refine and define human interactions and social relations within society for many years to come. In fact, it appears every realm of human endeavor is at the mercy of ICT tools and this seems to continue incrementally and infinitum. If secondary school education is critical to national development, national integration, better standard of living for citizens and it generally engenders empowerment, then, it will be right if government pays more attention to it. Employing frugal measures or lean management in governance, curbing or eliminating the manifested strands of corruption in governance, reprioritizing investment in education and massive ICTs deployment to enhance integration in secondary education together with the provision of the requisite infrastructure such as stable power supply will hasten the needed turn around than hinder it. Nigeria cannot afford to toy with the educational system. The greatest challenge to the state and federal government is to invest in the internet business and create enabling environment for secondary school students to participate in downloading available and useful knowledge in the internet. Secondary school students in Nigeria are already farther behind their peers in developed countries, thus widening the global digital divide.

Recommendations

1. Government at all levels should provide needed ICT infrastructural facilities and release more funds to the Nigerian secondary schools.
2. Government should provide a conducive teaching and learning environment to enhance quality education in our secondary schools.
3. Seasoned educational managers/administrators should be employed to manage secondary institutions for effective and efficient goal realization.

4. The energy sector should be improved so as to ensure steady power supply especially to secondary schools.
5. There should be constant workshops and in-service training for teachers and other support staff on the use and application of ICT facilities.

References

- Agbetuyi, P.A. & Oluwatayo, J.A. (2012). Information and Communication Technology ICT in Nigerian Educational System. *Mediterranean Journal of Social Sciences*, 3(3) September
- Anao, A. R. (2013). *Society, knowledge incubation and management*. Lagos. The Guardian Newspapers. November 11,75.
- Becker, H. (1986). *Computers in the schools. A Recent update*. Classroom computer Learning. January, 96-102.
- Carlo, S.& Firpo, J. (2011). Integrating computers into teaching: findings from a 3-year program in 20 developing countries. In L.R. Vandervert; L.V. Shavinina & R.A. Cornell (Eds). *Cyber education: the future of Distance Learning*. Larchmont, NY: Mary Ann Liebert, Inc, 85-114.
- Elluh, J. (2013). *What I believe*. Grand Rapids, MI: Erdmann.
- Federal Republic of Nigeria (FRN, 1988). Report on national policy on computer education. Lagos: Author.
- Harper, D.O. (2010). The creation and development of Educational computer technology. In R. M. Thomas & V.N. Kobayashi (Eds), *Educational technology: its creation, development and cross-cultural transfer*. Oxford: Pergamon Press, 35-63.
- Hess, F. M. & Lead, D.L. (2011). A shrinking “digital divide”? the provision of classroom computers across urban school systems. *Social science Quarterly* 18(4),765-778.
- Imhonopi, D. & Urim, U. M. (2012). The Impact of Globalization on the Educational System in Nigeria. *Asian Social science, Canada*, 8(2).
- Nwosu, O. & Ogbomo, E. F. (2011). ICT in Education: A catalyst for Effective use of information. *In Pacific Northwest Library Association, PNLA Quarterly*, 75(4).
- Okebukola, P. (2007). *Old, new and current technology in education*. UNESCO Africa, 14(15), 7-18.
- Poole, G. A. (2006). *A new gulf in American education, the digital divide*. New York Times, January 29
- Salomon, G. (1989). Computers in curriculum. In M. Eraut (Eds). *The international Encyclopedia of Educational Technology*. Oxford: Pergamon Press, 167-170.
- Shavinina, L.V. (2011). A new generation of educational multimedia: High intellectual and creative educational multimedia technologies. In L.R. Vandervert; L.V. Shavinina & R.A. Cornell (Eds). *Cyber education: the future of Distance Learning*. Larchmont, NY: Maryann Liebert, Inc, 63-82.
- Smith, D. (2010). Microcomputers in schools. In M. Eraut (Eds). *The international Encyclopedia of Educational Technology*. Oxford: Pergamon Press, 170-175.
- Spence, R. & Smith, M. (2009). *Information and Communication Technologies, Human Development, Growth and Poverty Reduction*. A Background Paper..... IDRC, April 28.
- Thierer, A. (2000). *Divided over the digital divide*. Washington, D.C: Heritage Foundation.
- Thomas, R. M. (2007). Computer technology: An example of decision-making in technology transfer. In R. M. Thomas & V.N Kobayashi (Eds). *Educational technology: its creation, development and cross-cultural transfer*. Oxford: Pergamon Press 25-34.

- UNESCO (2012). Information and Communication Technology in Education: A curriculum for Schools and Programme of Teacher Development. France: UNESCO, Division of higher Education.
- Visscher, A., Wild, P., Smith, D., & Newton, L. (2010). Evaluation of the implementation, use and effects of computerized management information system in English secondary schools. *British Journal of Educational Technology*, 34(3),357-366.
- Walton, R. E. (2005). Towards a strategy of eliciting employee commitment based on policies of mutuality. In R. E. Walton & P.R. Lawrence (Eds), *HRM, trends and challenges*. Boston: Harvard Business School Press, 34-76.
- Westera, W., & Sloep, P. (2011). The future of education in cyberspace. In L.R. Vandervert, L.V. Shavinina & R. A. Cornell (Eds). *Cyber education: The future of Distance Learning*. Larchmont, NY: Mary Ann Liebert, Inc, 115-136.