

School Principal as a Change Facilitator in ICT Integration

Mojgan Afshari, Kamariah Abu Bakar, Wong Su Luan Bahaman, Abu Samah, & Foo Say Fooi,
Faculty of Educational Studies, Universiti Putra Malaysia
mojganafshari@yahoo.com

Abstract

This paper attempts to draw connections between the extensive literature on leadership in schools and the research on Information Communication Technology (ICT) integration. The integration of technologies for teaching and learning has affected the traditional roles and responsibilities of educational leaders. It seems that using ICT in education seeks fundamental reform and change in traditional instructional programs. Principals are the on-site educational leaders who shape and communicate visions of teaching and learning within their schools, and by their action or inaction influence school activity. Therefore, knowledge of how principals effectively manage staff and student use of computers is essential. This paper will distinguish how educational leaders impact on the different levels of ICT integration in school. Also, it will be argued that leadership for cohesive ICT integration requires an appreciation and consideration of the influencing factors on ICT integration and their subsequent alignment. In addition, the need for further research into the role and responsibilities of educational leadership in the integration of ICTs will be highlighted. The conclusions outline implications for school principals and information system practitioners.

Introduction

The introduction of ICT would be a central component leading to a transformation in schools. This belief that ICT can play a key role in reforming education systems is reflected in similar agendas elsewhere in much of the industrialized world (e.g., DFEE, UK, 1997; MOE, Singapore, 2000; DE, Victoria, 1998; MOE, Research, and Church Affairs, Norway, 2000). These reform agendas are all concerned with the adoption and use of ICT in schools to increase learning opportunities and student motivation and achievement. These policies state that the introduction of ICT into educational environments will accelerate change and ultimately improve student learning.

In fact, ICT reforms require consideration of issues such as budgeting, staffing, resourcing and training; these are not uncommon considerations for other reforms. In addition, consideration of other issues such as building and managing infrastructures, networks, intranets, boards, managing large amounts of information, developing skills and strategies to support the creation of knowledge and utilization of ICTs, keeping up with the new technology and the related terminology are necessary. These can all be addressed in educational settings by building ICT capacities. In conjunction with building ICT capacity, there is a need to devise strategies to deal with resistance to change, coping with continuous change, and providing support structures in change rich environments in

order to sustain reforms. These aspects can be addressed in educational settings by building change capacities. Moreover, exploring leadership structures that compliment transformative ICT integration will also be valuable. Redefining roles and expectations, and exploring options for relevant ongoing professional development for leaders are all aspects that can be addressed in the building of Leadership Capacity. In fact, educational leader have a major responsibility for initiating and implementing school change through the use of information and communication technology and can facilitate complex decision to integrate it into learning, teaching and school administration (Schiller, 2003). So, this article will show that school leaders can have a significant impact on the integration of ICT into pedagogical practice and, in turn, on student learning.

Approaches that principals use to integrate ICT in school

In schools, the teachers should provide behavioral changes in the students. The teachers are expected to integrate their lessons with ICT in order to train the individuals of an information society. A number of studies were conducted to explore the relationship between ICT and the teacher (Moseley et al. 1999; Salamon 2000; McCannon & Crews 2000; Morales et.al. 2000; Fluck 2001; Zhao & Cziko, 2001; Granger et.al. 2002; Ainley et. al. 2002; Demetriadis et.al. 2003; Lin et.al. 2004; Ruthven et.al. 2004; Mooij, 2004). The findings of these studies revealed that although schools are focusing on ICT, the emphasis has often been on providing resources and not the pedagogies that will ensure the survival of the reform over the long term. In relation to the implementation of ICT, not only staffs need operate them, but also they must have an understanding of the pedagogy required to use them and to meet teaching and learning needs (Tearle 2004). According to Fullan (1998), successfully implemented reforms require leaders to participate as active learners in dynamic changing environments. Hence, educational leaders can have a major impact on the success, coherence and sustainability of the change process. They must manage issues related to technology and the educational community (Jacobsen & Hunter, 2002).

In a study of 18 schools in Hong Kong which introduced ICT across the curriculum, the way the technology was used, its impact on learning and teaching, “bore no relationship with the technology infrastructure or technical skills level of the teachers. Instead, it was very much determined by the vision and understanding of the school principal and the prevalent school culture.” (Pelgrum & Law, 2003, p. 62). Leading change is therefore a key challenge for principals to face as the key agents of change.

Yuen (2000) categorized schools which enthusiastically adopted ICT into teaching and learning into three predominant models of technology adoption. The models differed according to particular critical characteristics shown in the integration process: he named them ‘technological adoption’; ‘catalytic integration’ and ‘cultural integration’ models. In the ‘technological adoption’ model school, the principal and the majority of staff viewed ICT as a tool to improve existing teaching practices, and increase efficiencies and student IT skills. The key obstacles to implementation in these schools are gaining the right hardware and software technology and developing the right infrastructure and curriculum resource materials. Yuen noted that in these schools, the impact of technology on

teaching and student practices was minimal. The technology just confirmed existing presentations, predominantly through PowerPoint. (Lam & Lee, 2000)

Schools that were characterized as ‘catalytic integration’ tended to have ‘visionary leadership’ and a history of continuous educational reform through engaging teachers in a learning process. In these schools, teachers are seen as members of a ‘learning organization’ (Senge, et al., 2000). Principals in these schools view ICT as an opportunity to affect change through educational reform. ICT use was deliberate and designed as an integral part of the curriculum, consistent with the school ethos. The key focus in these schools was teacher development with strong support for curriculum leadership and development. These schools showed more student centered work, more innovative teacher practices, and were more likely to adopt innovative pedagogical practices such as collaborative problem-based learning tasks and projects. The school principal is the key agent of change, who has a clear vision and implementation strategy for ICT with the main elements being staff development focusing on curriculum tailoring and pedagogic innovation. In these schools, ICT helped advance curriculum reform initiatives already underway. The challenges for teacher in ‘catalytic integration’ schools are to rethink their attitudes, beliefs and understandings held about their roles as educators and to re-conceptualize their understanding of schooling and society.

The ‘cultural integration’ model schools (Law, 2000) had a strong and distinctive school culture and a long history of supporting student-led initiatives. These schools had long established support for student-initiated work that aligned with the school ethos of self-actualization and lifelong learning. ICT in these schools was perceived mainly as an opportunity to provide a very powerful tool to support the empowerment of students and teachers. These schools had a long history of supporting individual choices. The teachers and students were not required to learn technical skills to use ICT. Rather, ICT adoption was encouraged through existing channels across the schools. In these schools, a wide range of ICT adoption was found from expository teacher-centered teaching to more student-centered social constructivist and collaboration work as well as using ICT as a cognitive tool. In fact in these schools rather than the school staff leading technical training, it was the student organizations that ran courses for fellow students to improve their ICT literacy skills. Schools adopting the cultural integration model used ICT to help promote the school vision and mission, though in many different ways. The differences lie in the different educational values and emphasis that are deeply rooted in the rich tradition and history of the schools in the study. Schools without such established traditions and culture would find it extremely difficult to integrate ICT into the curriculum in the same way that these schools do.

On the other hand, DEST (2002) categorized schools according to their levels of ICT integration. They are as follows:

Type A: Encouraging the acquisition of ICT skills as an end themselves;

Type B: Using ICTs to enhance students’ abilities within the existing curriculum;

Type C: Introducing ICTs as an integral component of broader curricular reforms that are

changing not only how learning occurs but what is learned;

Type D: Introducing ICTs as an integral component of the reforms that alter the organization

and structure of schooling itself.

Many learning communities have accepted ICT at Type A or Type B level. Integration of ICTs at these levels has very little impact on curriculum frameworks and pedagogies. Type C and Type D level of integration differs in that it challenges learning communities at all levels to initiate and sustain reforms that not only modify but create new understandings, policies, structures and pedagogies that enable the potential of ICTs to be fully utilized. Emerging information technologies enable a shift from the transfer and assimilation of information to the creation, sharing, and mastery of knowledge (Dede, 1999). The implications for learning and teaching at this level need to be clarified and the values and beliefs that underpin educational practices need to be explored and challenged. This shift in thinking and approach may further contribute to the alignment of learning and teaching pedagogies so that the needs of learning communities can more adequately be addressed and catered for. Educational leaders need to acknowledge that in a dynamic climate training is essential if the change is to remain sustainable. Continuous learning at all levels within the community is important to help deal with the demands of evolving change (NCSL, 2001). Therefore, professional development programs that target the needs of the school community are essential if ICTs are to have a meaningful impact on learning (OECD, 2001).

Educational leaders are under increasing pressure to react to and manage issues related to technology and the educational community (Jacobsen & Hunter, 2002). They will spearhead the processes of identifying the changes that are needed in their local contexts, engaging their respective communities in the change process and carrying through the adjustments that are needed (DETYA, 2001). Thus, school leaders play an important role in establishing technology as a part of school culture (Anderson & Dexter, 2000).

In fact, leadership and ICT integration are multifaceted, complex processes that often require the questioning of practices and beliefs, the building of capacities and support networks that will assist the learning community make the transition to Type C and D (DEST, 2001) ICT integration. Educational leaders have to make decisions about both professional development opportunities for teachers and the acquisition of technology resources (Jacobson & Hunter 2003). Support for educational leaders is required to help ensure the success of ICT integration at Level C &D and the progress of school cultures in which expectations are clearly defined, and a commitment to change is made. Hence, the successful adoption of ICT to improve student learning requires effective leadership and planning (MCEETYA, 2005). Leaders need to be aware and capable of addressing associated issues competently and confidently.

In response to this question why some schools were more successful than others at implementing ICT. Hall, Rutherford, Hord, and Huling (1984) reported that principals

used different styles to implement changes such as ICT in the school. They classified these styles as *initiator*, *manager*, and *responder*. *Initiator* principals publicly demonstrated a strongly held vision of where their schools were heading and what was best for students. They had high expectations of their staff, and they made these expectations clear through many forms of communication. *Manager* Principals focused on the administrative aspects of the school to ensure that it was well-organized and efficient. They tended to resist change until all components of the change were ready for implementation. *Responder* principals focused on current concerns of the staff and the school community without looking at the "bigger picture." They tended not to intervene as much as their counterparts. In simplistic terms, initiator principals "made it happen," managers "helped it happen," and responders "let it happen." This is supported by Schiller (1991) who applied the work of Hall et al. to the realm of computer education (Schiller, 1991). He found that principals who exhibited an initiator or a manager style were more likely to be successful in implementing computer education on their campuses because they were able to identify long-term goals, implement strategies for computer education, and devise specific day-to-day tactics to accomplish them. Moreover they could persuade their staffs to accept computer education as a priority. Schiller (1991) added that initiator principals expected all teachers to become computer users in their classrooms. They stressed classroom applications of technology during staff meetings, organized staff training, ensured adequate time and resources for in-class computer use, and monitored every teacher's progress by reviewing instruction plans and other written materials. Hence, initiator principals spent time in the classrooms, observing and talking with pupils and teachers as they used computers. They not only stressed staff participation in the process, but also sought parental involvement and support through parent workshops and meetings.

These results show that the actions, attitudes and visions of leaders and administrators have the potential to greatly impact and influence the integration of innovations. Administrators who implement technology effectively in their schools and communities will contribute greatly to both education and the economy in the twenty-first century (Slowinski, 2000). Therefore, leaders need to have access to training programs, frequent practical experience and support structures that will enable them to develop the understandings, skills and resources that will lead to appropriate positive reform in their school setting.

Conclusion

Principals have a key role to play in the facilitation of educational change. At a time when information and communication technologies are being integrated into the classroom as learning tools, and when teachers are being asked to incorporate technology into their teaching practices, principals who demonstrate an initiator style are more likely to achieve success in their schools. By taking an active approach to innovation, principals can foster an environment in which such innovation has greater benefits for their staff and students. Generally, some of the influencing factors that may impact on the success of the ICT integration process, including the building of ICT capacity, is the level of understanding leaders of: related ICT pedagogies, the future role of ICT in education, and their own efficacy in utilizing ICTs. This reinforces the need for policy makers and

educational leaders to have access to current, relevant data that can provide insights into attitudes towards ICT and possibly also expose stages of progression in ICT integration in the different contexts, at the individual, school and systemic level. Hence, it is essential for educational leaders to have the understanding and the skills both pedagogically and technically. Leaders need to present a coordinated, aligned and holistic approach to building relationships, capacities and competencies that will support and guide learning communities to confidently and coherently integrate and utilize ICTs in the 21st century. Therefore, this information is valuable particularly for those planning and organizing training and development programs and for those responsible for the allocation of ICT budgets. It also highlights the importance of providing accessible support structures for educational leaders not only at the initial phase of ICT integration, but throughout the process.

References

- Ainley, J., D. Banks & M. Fleming. (2002). The influence of IT: perspectives from five Australian schools. *Journal of Computer Assisted Learning*, 18, 395-404
- Anderson, R. E. & Dexter, S. L. (2000). *School technology leadership: Incidence and Impact*.
- Centre for Research on Information Technology and Organizations. Irvine, CA: University of California. [Online Accessed 12th May, 2006] URL: http://www.crito.uci.edu/tlc/findings/report_6/report_6.pdf
- Demetriadis, S., Barbas, A., Molohides, A., Palaigeorgiou, G., Psillos, D., Vlahavas, I., Tsoukalas, I. and Pombortsis, A. (2003). Cultures in negotiation: teachers' acceptance/resistance attitudes considering the infusion of technology into schools. *Computers & Education*, 41, 19-37.
- DFEE (Department for Education and Employment) (1997). *Connecting the Learning Society: National Grid for Learning* [on-line]. Retrieved May 1, 2006 from <http://www.dfes.gov.uk/consultations/archive/archive1.cfm?CONID=42>
- DE, Victoria (Department of Education, Victoria) (1998). *Learning technologies in Victorian schools*. Melbourne: Education Department of Victoria.
- Dede, C. (1999) "*The Role of Emerging Technologies for Knowledge Mobilization, Dissemination, and Use in Education.*" Washington, D.C.: U.S. Education Department. [Online Accessed 12 May 2006] URL: http://www.virtual.gmu.edu/SS_research/cdpapers/mobilpdf.htm.
- DEST. (2002) *Making Better Connections: Commonwealth Department of Education Science and Training*. [Online Accessed 12 May 2006] URL: <http://www.detya.gov.au/schools/publications/2002/MBC.pdf>

DETYA (2001) *Learning for the Knowledge Society: An Education and Training Plan for the Information Economy* [Online Accessed 18th April 2006] URL: http://www.dest.gov.au/sectors/school_education/publications_resources/profiles/learning_for_the_knowledge_society.htm

Fluck, A. (2001). The rise and rise of computers in education. In *Children's Ways of Knowing: Learning Through Experience*. (eds. M. Robertson & R. Gerber) pp 144-157. Australian Council for Educational Research, Melbourne.

Fullan, M. (April 1998) *Leadership for the 21st century, Breaking the Bonds of Dependency*, [Online Accessed 12 May 2006] URL: http://www.michaelfullan.ca/Articles_98-99/04_98.pdf

Granger, C.A. M.L. Morbey, H. Lotherington, R.D. Owston & H.H. Wideman (2002). Factors contributing to teachers' successful implementation of IT. *Journal of Computer Assisted Learning*, 18, 480-488

Hall, G. E., Rutherford, W. L., Hord, S. M., & Huling, L. L. (1984). Effects of three principal styles on school improvement. *Educational Leadership*, 41(5), 22-29.

Jacobson, M. & Hunter, W. (2004). *Leadership and Technology in Schools* [Online Accessed April 21 2006] URL: <http://www.ucalgary.ca/~iejll/volume7/leadershipandtechnologyeditorial.htm>

Lam, C. C. & Lee, F. L. (2000). A caveat to researchers on the implementation of information technology. *Educational Research Journal*, 15 (2), 241-256.

Law, N. (2000). Cultural integration model. In N. Law, H.K. Yuen, W.W. Ki, S.C. Li, Y. Lee, & Y. Chow (2000) (Eds.) *Changing Classroom and Changing Schools: Study of Good Practices in Using ICT in Hong Kong Schools* (pp. 151-166). Hong Kong: Centre for Information Technology in School and Teacher Education, The University of Hong Kong.

Lin, J.M., Greg C. Lee and Hsiu-Yen Chen (2004). Exploring potential uses of ICT in Chinese language arts instruction: eight teachers' perspectives. *Computers & Education*, 42, 133-148.

MOE, Singapore (2000). *Mission with a passion: Making a difference*. Singapore: Ministry of Education.

Ministry of Education, Research, and Church Affairs, Norway (2000). *ICT in Norwegian Education: Plan for 2000-2003*. Retrieved May 10, 2006 from <http://odin.dep.no/archive/kufbilder/01/03/IKTiu005.pdf>.

Moseley, D., Higgins, S., ET AL. (1999) *Ways Forward with ICT: effective pedagogy using information and communications technology for literacy and numeracy in primary schools* (Newcastle, University of Newcastle)

MCEETYA. (2005). *Information and Communication Technologies in Schools Taskforce* [Online Accessed 17th April 2006] URL: http://cms.curriculum.edu.au/anr2003/ch9_monitoring.htm

McCannon, M., & Crews, T. B. (2000). Assessing the technology training needs of elementary school teachers. *Journal of Technology and Teacher Education*, 8(2), 111–121.

Mooij, T. (2004). Optimising ICT effectiveness in instruction and learning: multilevel transformation theory and a pilot project in secondary education *Computers & Education*, 42, 25–44

Morales, C., Knezek, G., Christensen, R., and Avila, P. (eds) (2000). *Impact of New Technologies on Teaching and Learning*. Instituto Latinoamericano de la Comunicacion Educativa (ILCE), Mexico City, Mexico.

NCSL, (2001) *Leading the Management of Change: The Building Capacity for School Development* [Online Accessed 10th May 2006] URL: <https://www.ncsl.org.uk/media/650/A7/leading-the-management-of-change.pdf>

Pelgrum, W. J., & Law, N. (2003). *ICT in Education Around The World: Trends, Problems And Prospects*. Paris: UNESCO, International Institute for Educational Planning.

Ruthven, K., S.Hennessy & R.Deaney (2004) Incorporating Internet resources into classroom practice: pedagogical perspectives and strategies of secondary-school subject teachers. *Computers & Education*, Available online at www.sciencedirect.com

OECD. (2001). Learning to Change: ICT in Our Schools [Online accessed 19th May 2006] URL: <http://www1.oecd.org/publications/e-book/9601131e.pdf>

Salamon, G.(2000). *It's not just the tool but the educational rationale that counts*.

Schiller, J. (2003). Working with ICT Perceptions of Australian principals. *Journal of Educational Administration*, 41(2), 171-185.

Schiller, J. (1991). Implementing computer education: The role of the primary principal. *Australian Journal of Educational Technology*, 7(1), 48-69. Retrieved March 17, 2005, from <http://www.ascilite.org.au/ajet/ajet7/schiller.html>

Senge, P., Cambron-McCabe, N., Lucas, T., Smith, B., Dutton, J. & Kleiner, A. (2000). *Schools that Learn: A Fifth Discipline Fieldbook for Educators, Parents, and Everyone Who Cares About Education*. New York: Doubleday.

Slowinski, J. (2000, January). Becoming a technology savvy administrator. *ERIC Digest*, 135. Retrieved March 17, 2006, from <http://eric.uoregon.edu/publications/digests/digest135.html>

Tearle, P. A. (2004). Theoretical and Instrumental Framework for Implementing Change in ICT in Education Cambridge. *Journal of Education*, 34, 3

Yuen, H.K. (2000). ICT implementation at the school level. In N. Law, H.K. Yuen, W.W. Ki, S.C.

Li, Y. Lee, & Y. Chow (2000) (Eds.) *Changing Classroom and Changing Schools: Study of Good Practices in Using ICT in Hong Kong Schools* (pp.119-124). Hong Kong: Centre for Information Technology in School and Teacher Education, The University of Hong Kong.

Zhao, Y., & Cziko, G. A. (2001). Teacher adoption of technology: a perceptual control theory perspective. *Journal of Technology and Teacher Education*, 9(1), 5–30