

FET 8662 Virtual Conference on Contemporary Education Issues

Final Paper for FET8662 Virtual Conference on Contemporary Educational Issues

By James Caldwell ID: 0050091420

Breaking Down the Barriers: A practical proposal for improving ESL teachers' confidence and competence towards adopting ICT in the classroom. (3204 words)

Breaking Down the Barriers: A practical proposal for improving ESL teachers' confidence and competence towards adopting ICT in the classroom.

By James Caldwell

Abstract

There exists a barrier between ESL teachers working at Young Hoon Elementary School Immersion Program (YHES IP) and their willingness to adopt Information and Communication Technologies (ICT) into their classroom programs. This paper will provide a practical proposal that can be implemented by YHES IP Administration to counteract this trend. Studies in this area indicate the existence of barriers pertaining to teachers' lack of confidence and competence towards adopting ICT into learning (Jones, 2004; Mouza, 2003). Studies also suggest that this barrier is historically widespread in educational settings around the globe (Becker, 2000; Conlon & Simpson, 2003; Cuban, Peck, & Kirkpatrick, 2002). YHES, in Korea, is a technologically well-resourced school where this barrier exists. Currently, there exists no practical model that YHES can implement to counteract this barrier. Literature focusing on improving teacher ICT uptake reveals that *administrative support, training, technical support, and collaboration*, are key elements in improving teachers' confidence and competence towards adopting ICT (Buckenmeyer & Freitas, 2005; Killion, 1999). Drawing upon data and recommendations from relevant literature and using these five key elements as a foundation, this paper will present a feasible proposal that YHES administration can implement to improve their ESL teachers' confidence and competence towards adopting ICT.

Introduction

The benefits of ICT on educational environments are numerous. The Asia-Pacific Development Information Programme promotes ICT as a tool that can expand access to education, prepare students for the workplace, and assist in the establishment of student-centered learning environments (Tinio, 2003). Yet, despite these benefits, studies have also recognised the barrier pertaining to teachers' confidence and competence in adopting ICT and optimising its full potential in education (Buckenmeyer, & Freitas, 2005; Becker, 2000; Conlon & Simpson, 2003; Cuban et al., 2002). Such studies reveal that up to 70% of teachers do not use the technologies available to them to enhance student learning

(Becker, 2000). They also reveal that this trend does not pertain to a single educational context, but is a global dilemma.

Young Hoon Elementary School Immersion Program, (YHES IP) Korea, is one such school where this barrier exists. The YHES IP department has no ICT policy in place and implementation of ICT is left up to individual teachers. The school maintains a 1:24 student: computer ratio with internet access. It has six Interactive Whiteboards in classrooms and 12 in common spaces away from classrooms. Maintenance to technologies is uncommon and teachers are constantly plagued by technology breakdowns. Informal observations by the author indicate that YHES IP teachers' use of ICT in their ESL classrooms reflect the fore mentioned trends.

Purpose

The results of these informal observations at YHES, combined with wide-ranging research findings relating to teacher ICT uptake, strongly suggest that there is a need for a practical ICT proposal that YHES IP Administration can implement to improve ESL teachers' confidence and competence towards adopting ICT. Currently, frameworks do exist to assist in improving teachers' ICT uptake (Newhouse, Trinidad, Clarkson, 2004; Education Queensland, 2008; Jones, 2008). Yet, for YHES's requirements, such proposals are often wordy, full of 'techno jargon', developed for specific educational contexts. As a result, the question still exists for the YHES IP administration: *What can we implement to improve teachers' confidence and competence towards adopting ICT into their ESL classrooms?*

Therefore, the objective of this paper is to present a practical ICT proposal that YHES administration can implement to improve their teachers' confidence and competence towards implementing ICT.

Literature Review

Literature highlights five key elements that need to exist to obtain optimal ICT uptake in schools. First, a foundation of administrative support towards ICT uptake needs to be in place (Mahmud, 2008; Mouza, 2003). Second, ongoing, meaningful training that seeks to improve teachers' confidence towards ICT needs to be implemented (Edmondson, 2003; Selwin, 1997). Third, training to improve teachers' competence towards ICT needs to be

implemented (Cox, Preston, & Cox, 1999; Mouza, 2003). Third, technical support must exist to increase teachers' confidence towards ICT (Cuban, 2002; Evans, 2002). Finally, there is the need for a collaborative network for teachers to learn and share their experiences as they go through the process of adopting ICT (Krajcik, & Blumenfeld, 1998; Fullan 1991). Each element will be described in detail below.

Administrative support

First, Evans (2002) recommends that school administration must recognise the connection between their overall vision and philosophy and the establishment of an ICT policy. Killion (2000) concurs by suggesting an effective ICT policy will draw on the core vision and philosophy of the school as rational for the improvement of teachers' confidence and competence in adopting ICT. Studies by Granger, Morbey, Lotherington, Owston, & Wideman (2002) found that successful ICT policies are those which establish objectives regarding pedagogy, skills acquisition for students and teachers, and access to resources.

Second, Killion (2000) emphasises the importance of administration showing their commitment to being 'cheerleaders' and 'visionaries' in ICT uptake. This can be demonstrated in how administration use ICT themselves and in how they reward and celebrate teachers' successes as they develop their confidence and competence towards ICT (Solomon & Solomon, 1995).

Third, it is strongly suggested by Snoeyink and Ertmer (2001) (as cited in Jones, 2004) that administration must provide time for teachers to improve their competence in using ICT. Their studies highlight the importance of the provision of non-contact time for teachers and effective timetabling for access to ICT resources. In addition, as Venn (1993) suggests, teachers need a period of time to adjust their pedagogical beliefs in light of the rapid technological change taking place.

Fourth, administration must provide reliable technologies to the school community. Cuban et al. (2002) suggests a direct link between the level of reliability of technology and teachers' confidence towards it. Pelgrum's (1999) studies support this by revealing that the lack of availability of computers in a school was a frequent obstacle to teachers' ICT use. Additionally, Teachers' must also have access to technologies in their own time.

Studies by Cox, Preston, and Cox (1999) indicate that teachers who interact with technology regularly are more likely to perceive it as a useful tool for teaching.

Additionally, administration must recognise the importance of its role in the provision of training, technical support and a collaborative network (Buckenmeyer & Freitas, 2005; Evans, 2002; Killion, 2000). This literature review will proceed by addressing each of these in turn.

Confidence Training

Literature reveals two categories for consideration in regards to teachers developing confidence towards ICT. First, there exists the need to develop teachers' confidence in using ICT. A training framework by Selwin (1997) advises that developing confidence in computer shy teachers revolves around a non-threatening, informal learning environment, where teachers' perceptions and views are similar to other learners in the group.

Edmondson (2003) builds on this idea in describing the role of 'play' as a key element in training. She has found that sessions that have a focus on play, promote teachers' self-esteem as the fear of failure is reduced.

Second, training needs to demonstrate how ICT can directly benefit student learning and teaching within a teacher's specific educational context. Studies by Cox et al. (1999) describe how teachers are more likely to develop confidence towards adopting ICT into the classroom if they perceive it to be useful to them, their teaching and their pupils' learning. Albaugh (1997) makes a relevant point in describing how teachers are usually very sceptical about adopting new technologies until they are provided with proof of its effectiveness towards their teaching context.

Competence Training

Literature reveals two categories for consideration in regards to developing teachers' competence towards ICT. First, skills based training is defined as developing teacher's understandings of how a particular kind of technology works (Diaz, 2001). Second, pedagogical training, which involves providing teachers with the understandings to be able to implement ICT into a specific context to enhance student learning (Diaz, 2001). Research has highlighted a tendency for ICT training to focus on the important task of improving teacher ICT skills, leaving pedagogical training largely unacknowledged

(Becker, 2000; Cuckle and Clarke, 2002). Yet, training that focuses on IT skills alone will not improve teachers' competence in adapting technology to extend or improve teaching and learning (Cox et al., 1999). To be effective, a balanced focus on both skills based and pedagogical training is pertinent in developing teachers' competence towards integrating ICT (Diaz 2001; Evans 2002; Fatemi,1999, as cited in Mouza, 2003; Wild, 1996 as sited in Jones, 2004).

Technical support

The frustrations that teachers encounter due to a lack reliable technology can be decreased, and teacher confidence increased, with the existence of reliable technical support (Buckenmeyer, & Freitas 2005; Cuban, 2002). Butler and Sellbom (2002) provide a clear definition for the technical support role. They suggest that technicians must regularly maintain and check technologies so that they remain reliable. They must provide rapid response to technology breakdowns, and ensure that reliable technology is being purchased. The role of the technical support staff can also be extended into educational tasks. Evans (2002) has observed the benefits of technical support being involved in writing and implementing lesson materials, as well as assessing the needs of staff and providing training accordingly.

A collaborative network

Establishing a collaborative network, where experiences, opinions and ideas are shared, will enable teachers to identify and solve problems and develop confidence and competence in integrating ICT (Smylie, 1995, as cited in Mouza, 2003). The collaborative network must reach beyond the walls of the school and integrate other institutions and communities. As Marx, Freeman, Krajcik, and Blumenfeld's (1998) studies found, teachers that collaborate on difficulties regarding ICT are more motivated towards integrating ICT. Additionally, an optimal collaborative network must extend into involving the school community in the democratic process of planning ICT change (Fullan, 1991). Studies by Dexter, Seashore and Anderson (2002), strongly show that establishing a professional community in the school led to the refinement of the school's ICT vision, improved the support system and increased ICT integration.

Literature Search Method

This study required the author to engage in critical and reflective reading of literature pertaining to teacher ICT uptake. This literature search included numerous peer-reviewed qualitative and quantitative studies that described the factors that support and prevent teachers' use of ICT. Recommendations within published books from educational specialists in the field of ICT were also collated. In total, data was accumulated from a set of 23 sources, primarily from Australia, Britain and USA. The data sources were obtained from the EBSCO, Academic Search Primer, Eric, general internet searches and library collections.

This literature search also required the author to logically collate the findings. Initial analysis of the data sources revealed five key elements that need to exist to improve teachers' confidence and competence in adopting ICT, they were; *administrative support*, *confidence training*, *competence training*, *technical support*, and a *collaborative network*. These key elements provided the author with logical headings to synthesise the numerous amounts of information collected.

Discussion- The Proposal

The objective of this paper is to establish a proposal to improve YHES teachers' confidence and competence in adopting ICT into their ESL classrooms. The proposal must be practical to YHES IP by being free of technical language, succinct, and promote a reflective and collaborative environment.

A structure and rationale for the recommendations in this proposal is established by drawing upon the understandings within each of the five key elements; *administrative support*, *confidence training*, *competence training*, *technical support*, and a *collaborative network*. The proposal structure also includes questions for reflective inquiry. Implementing a reflective inquiry approach in this proposal will not only force conversations among stakeholders about what is important, but also help create a shared sense of purpose among teachers and administrators (Hord, 1997; York-Barr, Sommers, Ghore, & Monte, 2005).

A Proposal for Improving YHES IP Teachers' Confidence and Competence Towards Adopting ICT in the Classroom

Element 1: Administrative Support

Recommendation 1.1

YHES IP Administration must establish an ICT policy that correlates with the schools overall vision and philosophies (Evans, 2002; Killion, 2000). This policy must consider the YHES administration's beliefs pertaining to pedagogy, training of staff, access to resources, and stakeholder involvement. The policy must provide objectives and goals, which will direct ICT integration. The policy will provide rationale for budget allocation, dedicated facilities, training, and delegation of personnel roles (Granger et al. 2002).

Reflective Inquiry

- What are our beliefs about learning?
- What goals will students meet through ICT integration?
- What goals will teachers meet through ICT integration?
- What personnel roles are needed to meet our ICT goals?
- What are the specific tasks of each ICT personnel?
- What funds are set aside to reach our ICT goals?
- How will we know that our ICT policy goals have been met?
- What provision is made to adjust our ICT policy to change with the school environment?

Recommendation 1.2

YHES IP Administration must play an essential role in leading change (Killion , 2000). YHES IP Administration are encouraged to be role-models in implementing ICT for administrative tasks, play an active role in ICT training, and reward the school community for its achievements in implementing ICT.

Reflective Inquiry

- What tasks does Administration effectively use ICT for?
- What aspects of ICT training are administrators involved in with teachers?

- How does Administration show appreciation to teachers for their achievements in implementing ICT?

Recommendation 1.3

YHES IP administration must provide teachers with time during the school day to become confident and competent in adopting ICT (Jones, 2004; Killion, 2000). YHES IP Administration must also set a reasonable timeframe that will allow for teachers to adapt to the technological changes taking place (Veen, 1993).

Reflective Inquiry

- What provisions are made to teachers' schedules to allow them to engage in ICT training?
- What time frame is needed for teachers to reach the objectives in the ICT policy?

Recommendation 1.4

YHES IP administration must provide the school community with access to reliable ICT (Cox et al. 1999). Consideration should be given to student: computer ratios, access to technologies that support curriculum goals, and the establishment of a secure intranet for file storage and sharing.

Reflective Inquiry

- What is our student: computer ratio? Does it match those of other schools in developed countries?
- What technologies do we have that directly correlate with our curriculum objectives?
- What processes and technologies are in place so that teachers have optimum access to resources?
- How does our school intranet contribute to the enhancement of learning?

Element 2: Confidence Training

Recommendation 2.1

ICT training at YHES must seek to improve teachers' confidence in using new technologies (Edmondson, 2003). It is beneficial that ICT training at YHES occur amongst groups of teachers who are at similar stages of confidence in ICT use. Training should be carried out in a relaxed, non-threatening environment, where teachers' individual needs are met (Selwin, 1997).

Reflective Inquiry

- What stage are our teachers at in integrating ICT in their classrooms? (Dwyer, Ringstaff, & Sandholtz, 1990)
- What training has been provided that implements exploration and play to increase teacher confidence?

Recommendation 2.2

ICT Training at YHES must demonstrate to teachers the benefits of technology on teaching and learning in the ESL context (Albaugh, 1997; Cox et al., 1999). For this, consideration must be given to curriculum objectives, developing teachers' pedagogical beliefs, the physical classroom space, and the students' backgrounds and needs.

Reflective Inquiry

- What training has been provided to increase teachers' understandings of technologies as a tool for learning and teaching?
- What curriculum objectives have been explored through the ICT training?
- To what extent does the training relate to level, backgrounds and needs of our students?

Element 3: Competence Training

Recommendation 3.1

Skills based ICT training at YHES must focus on developing competence in operating the various technologies available in the school (Becker, 2000; Cuckle and Clarke, 2002; Cox et al., 1999), including software such as word processors, databases and spreadsheets.

YHES Teachers must also become competent in using communicative technologies such as e-mail and discussion boards.

Reflective Inquiry

- What technologies at YHES (including software) should teachers be competent in using?
- What training has been provided that develops teachers' competence in using the technologies in the school?

Recommendation 3.2

Pedagogical training in the use of ICT should be focused on how ICT can be used to create student-centered approaches to learning (Diaz 2001; Evans 2002).

Reflective Inquiry

- What training has been provided that develops teachers' competence in using ICT in student-centered learning environments?

Element 4: Technical Support

Recommendation 4.1

Providing technical support is paramount in developing YHES IP teachers' confidence in integrating ICT (Cuban 2002; Evans, 2002). First, technical support at YHES must ensure that technologies work to their optimum capacity at all times, without breaking down (Butler and Sellbom, 2002). Second, technical support should extend into providing pedagogical support to the YHES school community (Evans, 2002).

Reflective Inquiry

- Who have we employed in a full-time technical support role?
- What is their exact job description?
- What provisions have been made so technical support personnel can optimally fulfil their role? E.g. budget, resources, work space.

Element 5: Collaborative Network

Recommendation 5.1

The YHES IP community must engage in a collaborative network with the objective of improving teachers' confidence and competence in adopting ICT (Smylie, 1995, as cited in Mouza, 2003). The collaborative network should bring together teachers from various locations to construct new skills and understandings based around similar projects. This collaborative network should promote a culture of life-long learning and ongoing training. It should encourage all YHES stakeholders to participate in the democratic process of integrating ICT (Fullan, 1991).

Reflective Inquiry

- What facilities and technologies do we use to engage teachers in a collaborative network?
- What internal and external committees and communities is our school involved in as part of our collaborative network?
- What provision is in place to enable our teachers to engage in ongoing training?
- What systems are in place to enable more confident/competent teachers to be mentors for other teachers?
- What opportunities do stakeholders have to input into the ICT Policy development?

Conclusion and future direction

From engaging in literature research this paper has developed a feasible proposal that can be implemented by YHES Administration to improve teachers' confidence and competence in adopting ICT. The structure of the proposal uses *administrative support, training, a collaborative network, and technical support*, as key foundational elements. From this reliable recommendations have been provided. The proposal adopts a reflective inquiry approach to assist YHES IP administration in engaging all stakeholders in the process of integrating ICT in to the YHES Immersion Program.

It is envisaged that future research will be conducted into the effectiveness of this proposal towards improving teachers' confidence and competence in adopting ICT. Such research would also focus on acceptance of the proposal by teachers and administration, as well as its effect on student learning. The results of this research would allow for refinements to be made to the proposal to increase its effectiveness.

While this proposal has been developed for implementation YHES, it is envisaged that the proposal will also be easily adaptable for other educational institutions.

References

- Albaugh, P. (1997). The role of scepticism in preparing teachers for the use of technology. *Proceedings of 'Education for community': a town and gown discussion panel*. Retrieved on December 15, 2008, from http://eric.ed.gov/ERICDocs/data/ericdocs2sql/content_storage_01/0000019b/80/16/74/ee.pdf
- Becker, H. J. (2000). Findings from the teaching, learning, and computing survey: Is Larry Cuban right? Retrieved September 4, 2008, from <http://www.crito.uci.edu/tlc/findings/ccsso.pdf>
- Bradley, G., Russell, G. (1997). Computer experience, school support and computer anxieties. *Educational Psychology*, 17(3), 267-284. Retrieved December 15, 2008, from <http://web.ebscohost.com.ezproxy.usq.edu.au/ehost/detail?vid=5&hid=104&sid=c171a5ba-0b75-4985-bf11-dfa30f48aa12%40sessionmgr108&bdata=JnNpdGU9ZWwhvc3QtbGl2ZQ%3d%3d#db=aph&AN=9710305095>
- Buckenmeyer, J. A., & Freitas, D. J. (June, 2005). *No computer left behind: Getting teachers on board with technology*. Paper presented at National Educational Computing Conference (NECC), Philadelphia, Pennsylvania. Retrieved on August 21, 2008, from http://www.iste.org/content/navigationmenu/research/necc_research_paper_archives/necc_2005/necc_2005_research_paper_archives.htm
- Butler, D. & Sellbom, M. (2002). Barriers to adopting technology for teaching and learning, *Educase Quarterly*, 25(2), 22-28. Retrieved December 15, 2008, from <http://net.educause.edu/ir/library/pdf/eqm0223.pdf>
- Conlon, T., & Simpson, M. (2003). Silicon Valley versus Silicon Glen: the impact of computers upon teaching and learning: a comparative study. *British Journal of Educational Technology*, 34(2), 137-150. Retrieved August 27, 2008, from <http://www.usq.edu.au/course/material/edu5472/content/mod06.htm>

- Cox, M., Preston, C., & Cox, C. (1999). What factors support or prevent teachers from using ICT in the primary classroom. *Proceedings of the British Educational Research Association Annual Conference*. University of Sussex at Brighton. Retrieved on December 10, 2008, from <http://www.leeds.ac.uk/educol/documents/00001304.htm>.
- Cuban, L., Peck, C., & Kirkpatrick, H. (2002). High-tech's high hopes meet student realities. *Education Digest*, 67(8), 47-54. Retrieved August 28th, 2008 from <http://www.usq.edu.au/course/material/edu5472/content/mod06.htm>
- Cuckle, P., & Clarke, S. (2002, September). Mentoring student-teachers in schools: views, practices and access to ICT. *Journal of Computer Assisted Learning*, 18(3), 330-340. Retrieved December 22, 2008, from <http://web.ebscohost.com.ezproxy.usq.edu.au/ehost/pdf?vid=7&hid=116&sid=cb428f13-b187-4425-bfca-9a30e8c7182d%40sessionmgr108>
- Dexter, S., Seashore, K.R. & Anderson, R.E. (2002) Contributions of Professional Community to Exemplary Use of ICT. *Journal of Computer Assisted Learning*, (18), 489-497. Retrieved December 15, 2008, from <http://web.ebscohost.com.ezproxy.usq.edu.au/ehost/pdf?vid=3&hid=107&sid=bda227cb-050b-43a1-8230-d8c2eae1f1bc%40sessionmgr104>
- Diaz, D. P. (2001). Taking Technology to the classroom: Pedagogy-based training for educators. The Technology Source Achieves at the University of North Carolina. Retrieved on December 10, 2008, from http://technologysource.org/article/taking_technology_to_the_classroom/
- Dwyer, D. C., Ringstaff, C., & Sandholtz, J. H. (1990). *Teacher beliefs and practices part 1: Patterns of change The evolution of teachers' instructional beliefs and practices in high-access-to-technology classrooms first-fourth year findings (ACOT Report No. 8)*. Cupertino: Apple Computer Inc. Retrieved August 8, 2008, from <http://www.apple.com/education/k12/leadership/acot/pdf/rpt08.pdf>

- Edmondson, A. (2003). What styles of computer training enhance teachers' competence and confidence to use ICT? *British Educational Communications and Technology Agency (Becta)*. Retrieved on December 10, 2008, from http://partners.becta.org.uk/page_documents/research/cpd_edmondson.pdf
- Evans, M. (2002) Open windows: becoming an e-learning school. *National College for School Leadership (NCSL)*. Retrieved on December 10, 2008, from <http://www.ncsl.org.uk/publications-index/publications-display.htm?id=21374>
- Fullan, M., (2001). *The New Meaning of Educational Change*. New York: Teachers College Press.
- Granger, C., & Morbey, M., Lotherington, H., Owston, R., & Wideman, H. (2002, December). Factors contributing to teachers' successful implementation of IT. *Journal of Computer Assisted Learning*, 18(4), 480-488. Retrieved December 21, 2008, from <http://web.ebscohost.com.ezproxy.usq.edu.au/ehost/pdf?vid=4&hid=106&sid=b7d1fda8-3c1c-4d4b-9533-ef7f99aeed3a%40sessionmgr108>
- Heaton, J. (1998, Autumn). Secondary analysis of qualitative data [electronic version]. *Social Research Update*.22. Retrieved January 20, from <http://sru.soc.surrey.ac.uk/SRU22.html>
- Jones, A. (2004). A review of the research literature on barriers to the uptake of ICT by teachers. *British Educational Communications and Technology Agency (Becta)*. Retrieved on December 10, 2008, from http://partners.becta.org.uk/upload-dir/downloads/page_documents/research/barriers.pdf
- Jones, H. (2008). *Pestering staff into online learning: An integrated plan for implementation*. Paper presented at ascilite Melbourne. Retrieved on December 10, 2008 from www.ascilite.org.au/conferences/melbourne08/procs/jones-h.pdf

- Killion, J., (2000). *Critical Issue: Providing professional development for effective technology use*. Retrieved on September 3, 2008, from <http://www.ncrel.org/sdrs/areas/issues/methods/technlgy/te1000.htm>
- Marx, R. W., Freeman, J. G., Krajcik, J. S., & Blumenfeld, P. C. (1998). Professional development of science teachers. Fraser, B., & Tobin, K. (1998). *International Handbook of Science Education*. London. Kluwer Academic Publishers. Retrieved December 20, 2008, from <http://books.google.com.au>
- Mouza, C., (2003). Learning to teach with new technology: Implications for professional development. *Journal of Research on Technology in Education*, 35(2). Retrieved on September 3, 2008, from http://www.iste.org/content/navigationmenu/publications/jrte/issues/volume_35/number_2_winter_2002_20031/learning_to_teach_with_new_technology_implications_for_professional_development.htm
- Newhouse, P., Trinidad, S., Clarkson, B. (2002). *Teacher Professional ICT Attributes: A Framework*. Retrieved on December 10, 2008, from www.det.wa.edu.au/education/cmis/eval/downloads/pd/framework.pdf
- Pelgrum, W.J., & Anderson, R.A. (1999). ICT and the merging paradigm for life-long learning: A worldwide assessment of infrastructure, goals and practices. *International Association for the Evaluation of Educational Achievement*. Retrieved on December 15, 2008, from http://www.iea.nl/fileadmin/user_upload/IRC2008/Papers/SITES/Pelgrum.pdf
- Queensland Government. (2008). *Smart Classrooms Professional Development Framework*. Retrieved on December 10, 2008, from http://education.qld.gov.au/smartclassrooms/strategy/tsdev_pd.html
- Scrimshaw, P. (2004). Enabling teachers to make successful use of ICT. *British Educational Communications and Technology Agency (Becta)*. Retrieved on December 10, 2008, from http://partners.becta.org.uk/upload-dir/downloads/page_documents/research/enablers.pdf

Selwyn, N. (1997). Teaching Information Technology to the 'Computer Shy': A theoretical perspective on a practical problem. *Journal of Vocational Education and Training*, 49(3), 395-408. Retrieved on December 15, 2008, from <http://ejournals.ebsco.com.ezproxy.usq.edu.au/Article.asp?ContributionID=10275942>

Solomon, G., & Solomon, S. (1995). Technology and professional development- 10 tips to make it better. *Learning and leading with technology*, 23(3) Retrieved December 21, 2008, from <http://www.iste.org/inhouse/publications/ll/pdfs/index.cfm?sku=23338s>

Tinio, V.L. (2003) *ICT in education*. Retrieved on December 10, 2008, from <http://www.apdip.net/publications/iespprimers/ICTinEducation.pdf>

Veen, W. (1993). The role of beliefs in the use of information technology: implications for teacher education, or teaching the right thing at the right time. *Journal of Information Technology for Teacher Education*, 2(2), 139-153. Retrieved on December 15, 2008, from http://pdfserve.informaworld.com/600351__768379146.pdf

York-Barr, J., Sommers, W., S., Ghore, G., & Monte, J. (2005). *Reflective Practice to Improve Schools*. Thousand Oaks: Corwin Press.