A DEVELOPMENT OF ICT COMPETENCY LEADERSHIP MODEL FOR TEACHERS IN SAINT GABRIEL'S FOUNDATION SCHOOLS OF THAILAND

Verayuth Boonpram[1]

Abstract: This research aimed to (1) explore and (2) design the information and communication technology (ICT) competency leadership model for teachers as well as to (3) find out its efficiency and (4) propose it to maintain the high-academic profile of Saint Gabriel's Foundation schools of Thailand. A mixture of qualitative and quantitative research designs using the five ICT indicators namely hardware, software, ICT communicative tools, teaching and learning and ethical standards were applied. The 4Is theory of transformational leadership factors in correlation with the eight types of ICT leadership approaches was used in the design of the ICT competency model. The school directors from its 13 Saint Gabriel's Foundation schools were given an in-depth interview and questionnaires were administered to those teachers who use ICT and English as the medium of instructions.

Most of the respondents were female, ranging from 40 years old and above; with more than 10 years of teaching experience. They were also educationally qualified having at least a minimum qualification of Bachelor's degree. The number of teachers was evenly distributed among the five major subjects such as English, Science, Mathematics, Computer and Social Science.

The results showed that 303 teachers have been using technological media as aid for teaching while computer/laptop and internet were technological devices most commonly used for teaching and learning as well as for research purposes. The use of ICT must be enhanced and supported to promote and develop their leadership skills thus acquire competency. ICT integration in the teaching and learning process provides meaningful experiences; make the work easier using the Microsoft office and communicate and receive data worldwide. Most of the respondents have been using web browsing for research purposes, online materials for class activities, emails for sending and receiving messages, and watching movies, listening to music and reading news as a recreational form of ICT communicative tools.

The respondents exhibited skills of integrating ICT in the teaching and learning process. They have employed record lesson attendance and making presentation for lectures. They have used software to enhance classroom activities and make the lesson more interesting for learners. Two thirds of the respondents agreed that professionalism was an essential requirement for being a good teacher. However, responding to the demands of the modern generation of learners with sufficient knowledge in ICT skills and healthy classroom atmosphere were primary qualifications a teacher must possess to gain competency in leadership. It was to cultivate moral values, enhance ethical standards and employ safety policies on the use of ICT resources.

Keywords: ICT Competency, Teacher Leadership, Saint Gabriel's Foundation Schools

Introduction

The advent of globalization creates new opportunities and various challenges. Competency and mastery in information communication technology is one of the prerequisites for meeting these academic challenges.

The schools of Saint Gabriel Foundation in Thailand respond to the call of academic challenges and seek to be ever faithful to its founding principle- "Education for all and all for education." The integration of ICT competency leadership model in the schools of the Saint Gabriel's Foundation of Thailand fosters high academic stability and serves as stronghold of competent educators that can mold future nation builders.

Technology competency goes alongside with the provisions stated in the law specifically, the National Education Decree 2002. Embedded in the legislation is a commitment to transportation and communication. Regulations also encourage the production of quality textbooks, academic text, equipment and integration of technology essential in the teaching- learning process.

Knowledge and skills acquisition of choosing the appropriate technology in the classroom must be vital for attaining quality and efficiency with regard to educational progress. It enhances the abilities of the students to be more adaptable and gain sufficient skills that they may carry throughout their lives (Sanrattana, 2003).

In spite of the growing need to develop ICT teaching and learning, different kinds of problems continuously arise. A recent study conducted by Department of Education Western Australia reveals that only 30% of public teachers have ever used a database. According to its findings based on the Teacher ICT Skills of Western Australian government schools, ICT knowledge, skill and professional attitude were found to be the three most influential factors in the professional development of ICT competences.

Moreover, various means, in academe, have been deployed to increase efficiency and improve standards yet problems regarding administration, supervision and sustainability persistence

Different kinds of problems currently exist regarding its usability in the ICT teaching-learning process; lack of student involvement, lack of enthusiasm on the part of the teachers and learners, a reluctance to shift from more traditional teaching to a more interactive practice, and the lack of a broad understanding of the

[1] Ph.D. Candidate in Educational Leadership, Graduate School of Education, Assumption University, Thailand

role and significance of ICT provision in the educational process.

Emphasis on the application of ICT in the classroom through changes in pedagogy and teaching methodology must be a priority goal for the school administrator to ensure a positive impact on the quality of the teaching-learning process. This may result in more efficient management of information technology teaching and learning in the classroom. It will also help students compete successfully in an information age that has more emphasis on a knowledge-based global economy. This is in compliance with the provision stated in the National Act. 1999 amended in 2002.

An important research outcome, therefore, will be the development ICT competency leadership model for teachers leading to the improvement of quality, efficiency and relevancy of the teaching-learning process thus creating opportunities for students to have wider access to information and different sources from around the world.

Theoretical Framework

The development of ICT competency leadership model is associated with the transformational leadership theory. It aims to enhance the level of expertise of teachers using the five ICT indicators namely hardware, software, teaching and learning process, communicative tools and ethical standards.

According to Avolio & Bass (1987), transformational leadership is concerned with improving the performance of followers and developing followers to their fullest potential. People who exhibit transformational leadership often have a strong set of internal values and ideals and they are effective at motivating followers to act in ways that support the greater good rather than their own self-interests (Kuhnert, 1994).

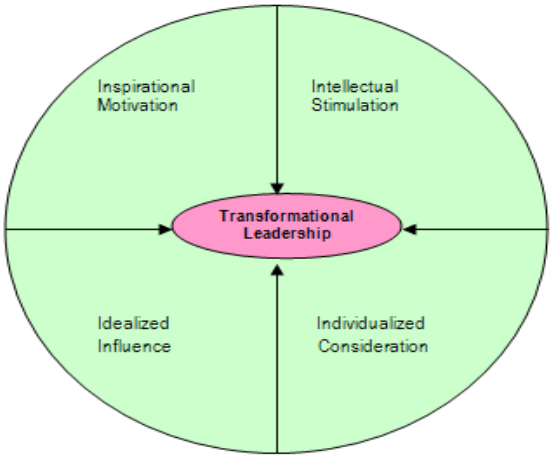

Figure 1: 4Is Transformational Leadership Factors (Avolio and Bass, 1987)

Idealized Influence - also called charisma which describe leaders who act as a strong role models for followers, have a very high standards of moral and ethical conduct and can be counted on to the right thing, deeply respected by followers and provide followers with a vision and a sense of mission.

Inspirational Motivation - inspired followers through motivation to become committed to and a part of shared vision in the organization, enhance team spirit, and describe leaders who use symbols and appeals to focus group members' effort to achieve more than they would in their own self-interest.

Intellectual Simulation - stimulates followers to be creative and innovative and to challenge their own beliefs and values as well as those of the leader and the organization, supports followers as they try new approaches and develop innovative ways of dealing with organizational issues and encourages followers to think things out on their own and engage in careful problem solving.

Individualized Consideration is representative of leaders who provide a supportive climate in which they listen carefully to the individual needs of followers; leaders act as coaches and advisers while trying to assist followers in becoming fully actualized.

ICT leadership correlates with transformational leadership theory. It was demonstrated on the eight roles of leadership defined by Yee (2000) on her studies on the "Images of School Principal's Information and Communications Technology Leadership" which described some characteristics of ICT leadership in sample schools but in varying degrees.

Ethics and ICT both have their place in today's organizations. Interrelationships of the two provide guidance and engender a commitment toward ethical behavior that is appropriate for and expected of IT professionals.

Ethics can have a number of relevant meanings. In general terms ethics is regarded as the moral rationales that influence a person's behavior or the carrying out of an activity or alternatively, ethics can also refer to the area of knowledge that deals with moral principles (Pearsall, 1998). However, from an information technology (IT) business domain perspective, Clarke's (1999) view was that the term ethics is intended to refer

to the guiding principles of doing what is right or wrong from a moral perspective, in reference to ethical behavior of both the individual IT professional and the governance of an IT department within a business organization.

The research of Weill and Ross (2004) has defined ten key principles essential to effective IT governance that are as follows:

1. Actively design governance and continue to provide adequate resources, support and attention;
2. Know when to redesign and adjust the governance systems;
3. Involve senior managers in committees, decisions and performance reviews;
4. Make choices that are business strategic and manageable;
5. Clarify the exception handling process to deal with the unexpected;
6. Provide the right incentives that reward alignment to the strategic business goals;
7. Assign ownership and accountability for IT Governance to 'champion' the process;
8. Design governance at multiple organizational levels;
9. Provide transparency and education;
10. Implement common mechanisms across the six key assets:
    - Customer relationships;
    - Product assets;
    - Human assets;
    - IT assets;
    - Physical assets;
    - Financial assets;

These ten principles represent the key outcomes of Weill and Ross's (2004) research and strongly supports the case for IT Governance as this research also affirms that businesses with effective IT governance programs in place, have attained twenty percent higher profit margins than those businesses with poor quality governance programs that have similar strategic goals.

Method

Participants

The research participants (n=320) were teachers teaching the five subjects in English, Science, Mathematics, Social Studies and Computer using ICT and English as the medium of instructions and Directors or Vice-Director from the 13 schools of Saint Gabriel's Foundation in Thailand.

Sample size of 325 teachers was based from Krejcie and Morgan (1970) table, while the representative schools are selected by the subject criteria of 320 (98.46%) teachers from the 13 schools of Saint Gabriel's Foundation in Thailand.

Instrumentation

The basis for the scale used in this study was through a questionnaire revolves around the five ICT indicators namely hardware, software, communicative tools, teaching and learning and ethics and through an in-depth interview of directors and vice-director regarding the administration and management of ICT in the 13 schools of Saint Gabriel Foundation in Thailand. The questions using the five-point rating scales (1-5) indicating their opinion: 1 = strongly disagree, 2 = disagree, 3= neutral, 4 = agree and 5 = strongly agree; and frequency use of ICT: 1 = never, 2 = rarely, 3 = sometimes, 4 = often and 5 = very often.

In-depth interview Directors or Vice-Director from the 13 schools of Saint Gabriel's Foundation in Thailand. It consists of 10 open-ended questions related to the ICT competency leadership for teachers, ethics and management policies affecting the teaching and learning process, importance, uses and benefits of software and hardware, the challenges met using the communicative tools and the factors affecting its successful implementation.

Handbook of A Development of ICT Competency Leadership Model for Teachers in Saint Gabriel's Foundation Schools of Thailand

The questionnaire before using the development of ICT competency leadership Model for Assumption Nakhonratchasima College teachers.

The satisfaction questionnaire of using the Development of ICT competency leadership Model for Assumption Nakhonratchasima College teachers.

Procedures

The following shows the steps of developing the ICT competency leadership model for teachers.

Phase 1: Explore of fundamental data and content analysis

Creation of instrument through research, review of related studies on ICT, determination of the population, data collection and data analysis, definition of the ICT competency leadership model for teachers in the schools of Saint Gabriel Foundation of Thailand.

Phase 2: Design of ICT Competency Leadership Model in accordance to the fundamental data.

Experts' traceability, SPSS and ranking score determine the appropriateness of the desired ICT competency leadership model for teachers. The results of the in-depth interview and questionnaires are gathered for content analysis and is arranged to design the ICT competency leadership model for teachers.

Phase 3: Efficiency of ICT Competency Leadership Model

Satisfactory evaluation form for teachers test the efficiency of ICT competency leadership model for teachers. It seeks to answer the underlying ethical standards in teaching, its impact on the teaching and

learning process, the kind of software to be used, the availability of hardware and its effectiveness as a communicative tool for teaching.

Phase 4: Proposal of ICT Competency Leadership Model

The highest and lowest scores obtained on each ICT indicator necessitate the competency for sustenance and improvement. The outcome reveals the kinds of training and requirements they need to be competent leaders and propose the development of the ICT competency leadership model intended for them with the application of 4Is theory of transformational leadership factors.

Results

The researcher conducted this study to create a model for the development of ICT competency leadership for teachers in schools of Saint Gabriel's Foundation of Thailand using the five ICT indicators based on the underlying theory of 4Is transformational leadership factors and in correlation with the eight types of ICT leadership. This study employed qualitative and quantitative research design. The qualitative method dealt with the content analysis while the quantitative included the descriptive data.

The quantitative method included an overview of the demographics of the sample and the data analysis of variable.

In terms of demographics, the sample was split almost evenly among the 13 schools of Saint Gabriel Foundation in Thailand with 25 respondents from each school. Twelve out of 13 schools had 25 (7.8%) respondents with the exemption of St. Gabriel College which has only 20 (6.3%) respondents. The total respondents were three hundred twenty (320) teachers teaching the five major subjects of English, Science, Mathematics, Computer and Social Science using ICT and English as medium of instructions. These teachers responded on the given questionnaires validated by the three (3) experts. Among the total population, 70% (n=224) were female and 30% (96) were male. The age of the respondents ranged from less than 30 years of age to 41 years and above. Majority of the respondents have more than 10 years of teaching experience (n=181 or 56.6%) followed by teachers with 5-10 years (n= 89 or 27.8%) and with those less than 5 years (n=50 or 15.6%). A total of 60.9 % (n=195) teachers were graduated with bachelor's degree, with 38.4% (n=123) teachers were Master's degree and 0.6% (n=2) of them were post-graduate degree.

Tables 1-5 show the ranking scores of the five ICT indicators used based on the values of their average mean. The highest value obtained requires sustenance and the lowest value necessitates improvement. These are the essential factors for the development of the ICT competency leadership for teachers in Saint Gabriel's Foundation schools of Thailand.

Table 1: Hardware Indicator Rank

Items	Hardware	Average Mean	Rank
4	School Planning and Leadership	4.09	1st
3	ICT Devices as a Learning Tool	3.80	2nd
2	Level of ICT Competency	3.53	3rd
1	ICT Devices Frequency Access	3.04	4th

Table 1 shows the need to improve the frequent access of ICT devices to increase the level of teachers' competency. School planning and leadership requires sustenance to further develop the competency of teachers.

Table 2: Software Indicator Rank

Items	Software	Average Mean	Rank
1	ICT Benefits	4.21	1st
2	Teachers' Perception	3.81	2nd
3	Software Proficiency	3.33	3rd

Table 2 shows the need to improve software proficiency in relation to its applications. The importance of software knowledge provides the many benefits of ICT that needs to be sustained in the teaching profession.

Table 3: Communicative Tools Indicator Rank

Items	Communicative tools	Average Mean	Rank
3	Uses of ICT	2.77	1st
2	ICT Necessities	2.38	2nd
1	ICT Effectiveness	2.20	3rd

Table 3 shows the need to acquire knowledge and practice on the manipulation of some ICT devices to improve its effectiveness. The use of ICT as a communicative tool for teaching requires sustenance.

Table 4: Teaching and Learning Indicator Rank

No.	Teaching and Learning	Average Mean	Rank
2	Achievement of Learning Outcomes	3.67	1st
1	ICT Integration in School Curriculum	3.64	2nd
3	Impact of ICT in Classroom Activities	3.12	3rd

Table 4 shows the impact of ICT in classroom activities as the factors need to be improved to ensure the positive outcomes of ICT in the teaching and learning process. Achievement of learning outcomes is essential

factors to be sustained to promote knowledge and skills.

Table 5: Ethics Indicator Rank

No.	Ethics	Average Mean	Rank
1	ICT Policies	4.23	1st
2	ICT Professional Standards	4.16	2nd

Table 5 shows the need to improve the ICT professional standards in schools. Strengthening the standards enhances ICT skills, concepts and moral values in relation to its use. The current ICT policies require sustenance to integrate moral values in the educational processes.

The qualitative data included the content analysis through an in-depth interview consisting of ten (10) open-ended questions. The twelve (12) Directors and one (1) Vice-Director from the 13 schools of Saint Gabriel Foundation in Thailand expressed their opinions on ICT management system in their schools and the competency leadership of their teachers based on the five ICT indicators namely hardware, software, communicative tools, teaching and learning and ethics.

The two methods employed on this research made this study feasible in developing the ICT competency leadership model for teachers in Saint Gabriel Foundation in Thailand as shown in figure 2.

are applied on these indicators. It is also correlated with the eight types of ICT leadership where each type corresponds to 4Is theory of transformational leadership factors with the goal of attaining ICT teacher leadership competencies in the 13 schools of Saint Gabriel Foundation in Thailand. The leaders in both types are characterized to engage in improving the performance of followers and developing their fullest potential based on their definitions and characteristics as defined by Yee (2000) on ICT types of leadership and Avolio and Bass (1987) on the 4Is theory of transformational leadership factors. Surrounding the first and second layers are the five ICT indicators namely hardware, software, ICT communicative tools, teaching and learning and ethics. These indicators serve as the core of ICT leadership competencies in the 13 schools. The scores of each ICT indicator are ranked from highest to lowest. The highest and lowest scores of each ICT indicator indicate the factors that necessitate sustenance and improvement.

Discussion

The development of ICT competency leadership model in Saint Gabriel's Foundation schools of Thailand centers on the five (5) ICT indicators namely hardware, software, ICT communicative tool, teaching and learning and ethics.

The research findings on hardware indicator corresponds to the study conducted by Faggiano and Fassano (2008) about teachers' perception and usage of

Figure 2: ICT Competency Leadership Model

This model is validated by the seven (7) experts consisting of four layers. The first layer indicates the competencies of teachers. These ICT competencies are the skills, knowledge and appropriate attitudes related to the five ICT indicators. The 4Is theory of transformational leadership factors on the second layer

ICT in Italian schools that most teachers use the web mainly to acquire further knowledge in their subject matter. Table 10 of chapter 4 shows that the respondents search knowledge via internet with 52.5% level of expertise while table 8 shows that 94.7% uses computer

and laptop followed by the use of internet with 91.3% as the technological devices frequently used.

Bukaliya et. al (2011) suggested a number of factors that can be attributed to the success or failure of an undertaking. Among these factors are issues to do with qualifications, skills, knowledge and appropriate attitudes. The respondents perceived the use of software in teaching and learning as the need to acquire expertise on ICT software as a sort of qualifications. They also perceived that ICT provides better learning experiences and the need to dedicate time to prepare, explore and develop ICT skills in dissemination information as a form of knowledge, skills and appropriate attitudes as shown and discussed.

The impact of ICT in classroom activities in the teaching and learning indicator as shown in table 21 states that ICT makes lessons more interesting, more fun and more diverse but it also makes the lessons more difficult. Richardson (2000) on her analysis of ICT implementation in education strategies in Australia, Canada, Finland and Israel presented a major concern to the two key research issues in ICT implementation: assessment methods in the classroom and long-term assessment of outcomes of ICT-integrated learning. She recommended that before focusing on even more comprehensive ICT integration, analyze the positive and negative effects ICT-based learning may be having on future citizens in order to ensure positive outcomes before it is too late.

The respondents specified that all students can use technological devices in teaching and learning activities as one aspect of ICT communicative tool that show the most necessity with 63.6% indicated in table 17. This result is related to the case study in Nigerian University by Yusuf and Balugan (2011) about the student-teachers' competence and attitude towards ICT; limited infrastructural facilities, difficulties in infusing internet use into the curriculum and lack of appropriate teacher development revealed as the problems on the development of ICT in schools. This study suggested that it is very important that these problems are addressed and provisions are made for lectures to be able to integrate ICT-based methodology in their lectures, and also all students should be provided with access to media laboratories necessary for further research on the impact of ICT competency and other innovative application in Nigerian universities and other universities in the developing nations as this study established the wide gap between the UNESCO's ICT competency standards for teachers and what is obtained in teacher education.

Positive attitudes of teachers and administrators are essential in the implementation of ICT policies and professional standards as ethics indicator to foster social, ethical, legal and human issues in the use of ICT. This was perceived by 57.1% of the respondents to be one of the most important ICT policies while 44.0 % of the respondents expressed the promotion of safe and healthy use of technology resources as the professional attributes need to employ in schools. According to Davis et. al.'s technology acceptance model, the more positive responses to the factors of perceived usefulness and perceived ease of use, then the more positive the attitudes of teachers will be to the use of ICT and the more likely they will be to use ICT in their teaching.

ICT competency leadership model for teachers requires frequency use of ICT resources, positive ICT effects in the teaching and learning process, sufficient knowledge of ICT operation and use, quality of ICT professional standards, and efficient application of ICT resources. These are the factors that obtained low scores thus needs to be strengthened.

The methods applied by school leaders to encourage and support teachers to gain ICT competency, exposure to a technologically enhanced classroom environment, implementation of ICT policies for schools, recognition of ICT benefits, and the achievement of learning outcomes with the use of ICT as vehicle for learning are the attributes that need to be sustained.

The eight types of ICT leadership defined by Yee (2000) corresponds to the school planning and leadership in hardware indicator as specified in table 12 such as the use of ICT is encouraged and supported. This is related to equitable providing of ICT leadership. Likewise careful challenging ad constant monitoring types of ICT leadership linked to ICT support of various learning styles that facilitate higher-order thinking skills.

ICT benefits of using software particularly in enhancing teacher's personal development and learning calls for one of transformational leadership factor known as individualized consideration where the leaders provide a supportive climate to the individual needs of the followers and become fully actualized. Idealized influence describes leaders who act as a role model for followers with very high standards of moral and ethical conduct. This is associated with ethics indicator wherein one of the ICT professional standards need to employ in schools is to model to teach legal and ethical practice related to technology use. Sound understanding of ICT operations and concepts in designing communicative tools for education from the ICT communicative tool indicator corresponds to intellectual stimulation. The leader stimulates follower to be creative and innovative while inspirational motivation is evident in the collaborative learning of teaching and learning indicator. This factor inspired followers through motivation and enhance team spirit.

In compliance to the provision stated in the National Act B.E 2542 (1999) and amendments (second national education act B.E 2545 (2002) chapter 9 on its technologies for education states some of its provisions such as changes in the pedagogy and teaching methodology must be a priority goal of school administrators to ensure positive impact on the quality of teaching-learning process. These changes call for the

development of this model. However, it requires close monitoring, supervision and evaluation of the model to determine its success and outcomes for current and future use.

The development of ICT competency leadership model for teachers provides professional advancement in line with the Saint Gabriel's Foundation policy and government legislation. Continuous acquisition of ICT competency leadership sustains quality education and promotes teacher-knowledge creation, innovation and life-long learning.

References

Adebisi, A. A. (2008). *Information Communication and Technology in Port Elizabeth Secondary Schools: Exploring the Digital Divide*. (Unpublished dissertation). Nelson Mandela Metropolitan University.

Anderson, R. E., & Dexter, S. L. (2000). *School technology leadership: incidence and impact, teaching, learning and computing: 1998 national survey* (No. 6). Minnesota, Minneapolis: Center for Research on Informational Technology and Organization.

Ajzen, I. (1988). *Attitudes, personality, and behavior*. Chicago: Dorsey Press.

Ajzen, I., & Driver, B. L. (1992). Application of the theory of planned behavior to leisure choice. *Journal of Leisure Research* 24(3), 207-224.

Avolio, B. J., & Bass, B. M. (1987). Charisma and beyond. In J. G. Hunt (Ed.), *Emerging leadership vistas* (29-49). Boston: Lexington.

Barnett, A. (2003). *The impact of transformational leadership style of the school principal on school learning environments and selected teacher outcomes: a preliminary report.* Paper presented at NZARE AARE, Auckland, New Zealand. Manuscript available from the author.

Bass, B. M. (1990). From transactional to transformational leadership: learning to share the vision. *Organizational Dynamics*, 13, 26-40.

Bass, B. M. & Avolio, B. J. (Eds.). (1994). *Improving Organizational Effectiveness through Transformational Leadership.* Thousand Oaks, CA: Sage.

Bass, B. M., Avolio, B. J., Jung, D. I., & Berson, Y. (2003). Predicting unit performance by assessing transformational and transactional leadership. *Journal of Applied Psychology*, 88(2), 207-218.

Bass, B., & Steidlmeier, P. (1999). Ethics, character, and transformational leadership behavior. *The Leadership Quarterly*, 10(2). 181-217.

Clarke R. (1999). *Ethics and the internet: Cyberspace behavior of people, communities and organizations*. Available from: http://www.anu.edu.au/people/ Roger.Clarke/II/IEthics99.html

Krejcie, R. & Morgan, E. (1970). *Educational and Psychological Measurement*. New York: John Wiley.

Kuhnert, K. W. (1994). *Improving organizational effectiveness through transformational leadership*. Thousand Oaks: Sage Publications.

Richardson, J. (2000). *ICT implementation in education: An analysis of implementation strategies in Australia, Canada, Finland and Israel*. Final report submitted to the Ministry of Education, Luxembourg.

Sanrattana, W. (2003). *The education administration of previous issues, principles, theories and analysis.* (4th Ed.). Bangkok: Thipwisut.

Weill, P., & Ross, J. W. (2004). *IT governance – How top performers manage IT decision rights for superior results.* Boston: Harvard Business School Press.

Yee, D. L. (2000). Images of school principals' information and communications technology leadership. *Journal of Information Technology for Teacher Education*, 9(3), 287-302

Yusuf, M. O., & Balogun, M. R. (2011). Nigeria student-teacher's competence and attitude towards information and communication technology: A case study in a Nigerian University. *Contemporary Educational Technology*, 2 (1), 18-36.