

## CORRELATION BETWEEN CULTURAL PERCEPTIONS, LEADERSHIP STYLE AND ICT USAGE BY SCHOOL PRINCIPALS IN MALAYSIA

**Anantha Raj A. Arokiasamy**

*Quest International University Perak (QIUP)*

*Faculty of Business, Management and Social Sciences (FBMSS)*

*Ipoh, Perak, Malaysia.*

*Email: anantharaj.arokiasamy@qiup.edu.my*

**Dr. Abdul Ghani Kanesan bin Abdullah**

*Email: agk@usm.my*

**Dr. Aziah Binti Ismail**

*School of Educational Studies, University Science Malaysia (USM), Penang, Malaysia.*

*Email: aziah@usm.my*

### ABSTRACT

School leaders are key factors in implementation of information and communication technology (ICT) in schools. They need to understand the capacities of the new technologies, to have a personal proficiency in their use, and be able to promote a school culture which encourages exploration of new techniques in teaching, learning and management. However, there is less information about the current status of ICT use by Malaysian school principals. This paper investigated the extent to which secondary school principals use computers in Malaysia and determined factors related to level of computer use by principals (cultural perceptions and leadership style of principals). Initial report also highlighted analysis of a baseline data gathered from 520 secondary school principals in the state of Selangor and Wilayah Persekutuan, Malaysia. Findings indicate that school principals are using computers for instructional and administrative purposes and they have moderate competency in computer applications and spent a few times a week working on their computers. Also, cultural perceptions and transformational leadership contributed significantly to the level of computer use by principals. It is anticipated that the data obtained from the study will open new lines of inquiry about the crucial roles of school leaders in the adoption of ICTs and will contribute to decisions about future developmental needs because more will be known about their preparedness for change. Hence, policy makers must design professional development programs, such as leadership studies, in order to teach the components of transformational leadership; idealized influence, inspirational motivation, intellectual stimulation and individual consideration to future administrators.

**Keywords:** ICT, school principals, leadership style, cultural perception and Malaysia.

### INTRODUCTION

ICT industries have proven to be the backbone of national development in many countries. Malaysia as a developing country is also experiencing a similar trend. Malaysia's total ICT expenditure indicates that more and more local organizations are incorporating ICT into their business activities. The government has prioritized ICT as an issue of national importance and established new agencies and policy initiatives to accelerate its implementation and thereby transform Malaysia into a developed and knowledge-based country (Tipton, 2002). It also accelerates the economic development and quality of life of the society (Lu, 2001). The rapid development in the ICT sectors beyond the expectation has created a vacuum in the employment trend. The ICT industry in Malaysia has enjoyed highest employment growth of 27.9% in 2010 and is expected to register 31% growth in 2013 compared to other industries (Employment Outlook, 2012). Beaumont et al. (2004), however, reported that there is an increase in shortage of skilled workforce in the country despite the increased demand for qualified ICT employees as more and more organizations continue to rely on ICT for their effectiveness and competitive advantages (World Employment Report, 2011).

ICT has pervaded almost every facet of our society. Around the world, ICT is ubiquitous in the business world, the workplace and at home. To ensure that schools keep pace with these developments in the larger society and to tap the enormous potential of ICT in teaching and learning, many countries have invested considerable amounts of resources to integrate ICT into education. Malaysia, for instance had invested RM1 billion between 1999 to 2005 to facilitate ICT integration in schools, spending mostly on hardware, software, infrastructure and training of teachers (Ministry of Education, 2001).

In discussion about the potential role of technology in education, Fiske and Hammond (1997) stated that instructional technology is considered to be a key to educational quality as we enter the new millennium. Many educators believe that computer use for instructional purposes can be employed effectively to enhance teaching and learning. In other words, computer technologies can change the teacher's role from information giver to facilitator, counselor, advisor, guide, coach, co-learner, mentor, resource and technology managers, and mediator to the students (Jonassen et al., 1999). Similarly, Attaran and Vanlaar (2001) pointed out that technology reduces record keeping time in schools and simplifies administrative tasks. Also, computer networking is creating a professional band between teachers and administrators. On the other hand, it offers teachers valuable methods of enhancing successful instructions. Besides, computer use assists students in meeting basic educational requirements and it fulfills an instructional need by individualizing the material to the competency level of the learner. In this way, computer use provides an active cooperative learning environment and offers the flexibility that is now mostly absent in the traditional classroom.

In addition, Otto and Albion (2004) reported that although ICT are now widely available in schools, it does not integrate fully into teaching and learning. In line with this idea, Sheingold and Hadley (1990) pointed out that integrating technology is not about helping people to use computers but it is about helping teachers to integrate technology as a tool for learning. In fact, in the ideal teaching and learning setting, technology should be as transparent a tool as a pencil. Therefore, technology integration in classrooms is more about teaching and learning than it is about technology (Mills & Tincher, 2002).

Unfortunately, the implementation of ICT into the Malaysian schools has not been guided by research. The "initiation stage" (Rogers, 1995), which demands information gathering and planning, has been overlooked in the urgency to implement ICT in schools. A key element that has been left out understands the cultural perceptions of the end-users toward these new tools. Such inattention to the principals' cultural perceptions may generate unforeseen repercussions for ICT diffusion in Malaysian schools. Many technology experts have pointed out that the integration of ICT in education should occur in the light of the cultural conditions of the country and the prevailing school culture (Watson, 1998; Harper, 1987; Thomas, 1987). Obviously, unless principals recognize the importance of ICT for their school and national cultures, they will not use it in their classes. This study is poised to investigate the extent to which secondary school principals use computers in Malaysia and determine the factors related to the level of computer usage by principals (cultural perceptions and leadership style of principals).

## LITERATURE REVIEW

### Leadership Style and Integration of ICT at Schools

Integration of ICT into education, as Eib and Mehlinger (1998) define it, is a procedure in which instructional technologies such as computers and software are applied regularly to support both teaching and learning across levels and subject matter. There has been a significant amount of research devoted to the integration of ICT in schools, its effects on student learning and attainment, and hindrances that prevent its successful use (Becker, 1993; Butzin, 1992; Cafolla & Knee, 1999; Cradler, 1999; Kozma & Croninger, 1992). While some researchers have indicated the benefits of integrating ICT into education (Holinga, 1999; Taylor, 1992; Wibur, 1997), others have found that applications of ICT in the classroom conferred little or no positive improvement in student attainment (Slavin, 1991; Stevens, 1992). Picciano (1998), on the other hand, observed that the benefits that ICT integration confers on student attainment are not uniform at all grade levels.

While Baily (1997) suggested that the focus of ICT application should be teaching and learning due to its potential use in the classroom, Levinson (1990) pointed out that in addition to providing support in teaching and learning, ICT may be used to alleviate common problems in school such as teacher shortage and high costs of education. Technology could also create new solutions to cope with the spectrum of needs that arise in the classroom in this information age (Krajcik, Soloway, Blumenfeld, & Marx, 1998).

In the age of information, principals must be able to integrate ICT into their daily practice and to provide consistent and positive leadership for technology use in the teaching-learning process. In fact, they must be technology leaders. According to Hope, Kelly and Guyden (2000) technology leadership involves both understanding the technologies and how they can be applied to accomplishing tasks. In a study that examined the role of administrators in the integration of technology into the learning environment of three United States school districts, Gibson (2002) stated that school principals must focus their energies on ten technology categories: existing practice, planning, curriculum, resources, staff issues, communications, support, obstacles, staff development, and implementation. In this way, principals need to understand the capacities of the new technologies, to have a personal proficiency in their use, and be able to promote a school culture which

encourages exploration of new techniques in teaching, learning and management (Schiller, 2003). Therefore, schools need leaders who can facilitate the change process and support a learning community for technology integration.

According to Fullan (2003), no successful large-scale change or school reform effort has advanced very far without the support of the school leaders. Similarly, Schiller stated that “principals have a key role to play in the facilitation of educational change” (p. 4). In his studies of the elementary school principal as a change facilitator for ICT, Schiller (2003) concludes that principals who take an active approach to innovation can foster an environment that has greater benefits for their students and staff. Hence, principals’ awareness, understanding and use of ICT are essential for effective use of computers in the school (Smith et al., 1999). A school administrator needs to be familiar with ICT and know what to look for in the classroom if effective supervision, evaluation or support for a classroom teacher is to be made (Fleit, 2000). This view is supported by Hope, Kely and Guyden (2000) who noted that school leaders should use technology themselves, developing an awareness of how technology can be used and modeling the practice to the school staff. Similarly, Stegall (1998) stated that it is important for principals to use computers, to seek assistance and advice from experts, from a technology committee, visit other schools, brainstorm ideas and hire and train technology ‘savvy’ teachers. Therefore, successful ICT development within the school will require the leader to be aware of the possibilities and future development of technology and how the school might integrate these into teaching and learning.

Given the enormous potential of ICT to impact upon education, it is imperative that factors that influence the success of ICT integration efforts be explored. Many researchers have identified effective leadership as a key ingredient of, and vitally important to, the success of any innovation in education (Bennett, 1996; Fullan, 1993). In particular, Becker (1993) contends that leadership is even more critical for successful integration of ICT in schools today. Rieber and Welliver (1998) also recognize that effective leadership is needed to enhance the transformation of our education system by taking advantage of the potential of ICT. Others go so far as to say that the success or failure of integration efforts rests on the shoulders of school leaders (Salzano, 1992). Substantiating the view that leadership is a critical factor in ICT integration efforts, Lockard, Abrams, and Mary (1990) explain that ICT integration is an enormous task that entails considering many issues and making many decisions. Agreeing, Dede (1992) points out that as leaders influence, make decisions, provide support, and model behavior, the possible impact leadership can have upon successful ICT integration is obvious.

### **Transformational Leadership**

Transformational leadership is seen as a promising form of leadership for advancing educational institutions because it can cause essential change, resolve major concerns, and create new paradigms (Banerji & Krishnan, 2000). Such a leader supports open communication which creates team motivation. S/he also helps build the confidence of her/his team members by providing necessary training and encouraging team building. Dimmock and Walker (2000) too affirm the link between team motivation and goal-setting and visioning. Teamwork then, calls for participatory leadership and proactive support for change (Walker & Dimmock, 2000). To this end, a transformational leader possesses the necessary drive to initiate and maintain transformational processes within the organization. S/he must be capable of articulating a convincing and realistic vision and focus others towards a new critical path. If required, the organization may need to be redesigned to support the transformation (Banerji & Krishnan, 2000).

Charbonneau (2004) noted that the popularity and attractiveness of this leadership style stems at least in part, from its consistent association with superior performance in a range of organizations. Transformational leaders facilitate the thinking of old problems in new ways. They are often capable of communicating a vision and mobilizing the energy necessary for change. Their behaviors and traits include empathy, the need for power, good rhetorical skill, intelligence, and the consideration for others. The effect of this leadership style is that it inspires or motivates followers, gains commitment from followers, changes attitudes and supports the goals of the individual and organization.

According to Schein (1992), the most intriguing leadership role in culture management is one in which the leader tries to develop a learning organization that will be able to make its own continuous diagnosis and self-manage whatever transformations are needed as the environment changes. The learning leader must exhibit the self-confidence that active problem solving leads to learning and thereby set a suitable example for other members of the organization. The process of learning must eventually be made part of the culture and not seen as any given solution to any given problem (Schein, 1992).

Despite its limitations, there are certain elements of transformational leadership which do lend themselves to educational and ethical consideration. It appears to be very important for leaders and educators to have a clear vision of what they want to achieve and how they want to achieve it. Moreover, when its heroic implications are

reduced or eliminated, transformational leadership can advocate for processes that involve the contributions of all parties, rather than being a matter of one person “doing leadership” to others (Bottery, 2004, p. 19). Future leaders will be their ability to instill a learning mindset into their organization. The upcoming generation of leaders will have to be a generation of learning evangelists by highlighting the importance of learning and establishing a context where employees want to and are able to learn. Corporate leaders will have to be more capable of strengthening their organizations for future challenges and increasing competitive and innovative abilities (Brown & Posner, 2001).

Educational professionals are being objectified and stratified into leaders and followers according to neo-liberal versions of the performing school. Leadership is being defined as particular tasks and behaviors that enable those who are responsible and accountable for learning outcomes and measures of school improvement. However, this objective definition of leadership does not float free of organizational and personal histories that also shape and enable agency, and how real people with real lives struggle within and through the contradictions that challenge their values (Gunter, 2001).

According to Northouse (1997), one of the best styles of leadership is transformational leadership that can change and transform individuals. Transformational leadership occurs when one or more persons engage with others in such a way that leaders and followers raise one another to higher levels of motivation and morality (Burns, 1978). An important goal of a transformational leader is to develop followers beyond their potential (Lee, 2005). Hence, transformational leaders try to develop and satisfy the higher-order needs of followers to gain their followers’ commitment to the organization (Rowden, 2000).

The concept of transformational leadership has acquired wide popularity among leadership researchers during the past decade (Lowe, Kroeck et al., 1996) because of its qualitatively different approach to motivating followers as compared with other leadership styles (Howell & Avolio, 1993). Bass and Avolio (1994) described transformational leadership as being composed of four unique but interrelated behavioral components: inspirational motivation, intellectual stimulation, idealized influence, and individualized consideration. Several empirical and theoretical studies have found that leaders who display these four behaviors are able to realign their followers’ values and norms, promote both personal and organizational changes, and help followers to exceed their initial performance expectations (Jung & Avolio, 2000). Therefore, transformational leader is noted as one of the most important factors affecting the integration of educational technology and has input into all the essential conditions that promote the integration of educational technology (Brooks-Young, 2002; Ross, McGraw & Burdette, 2001).

### **Transactional Leadership**

Transactional leaders focus on the interpersonal exchanges that occur between themselves and their subordinates. Bass (1998) argued that transactional leaders are motivated by what is easily identifiable and measurable. According to Bass (1985), transactional leaders are more reactive than proactive; less creative, novel, and innovative; more reforming and conservative; and more inhibited in their research for solutions. Yukl (1999) postulated that transactional leadership includes a diverse collection of mostly ineffective leader behaviors that lack any clear common denominator. Lowe and Galen (1996) reported that transactional leaders operate within an existing system, avoid risk, prefer effective answers and are less likely to support the status quo. Bass and Avolio (2004) delineated the following key aspects that include transactional leadership.

- Contingent Reward – providing others with assistance in exchange for their efforts; discussing in specific performance targets; and making clear what subordinates can expect to receive for their efforts and expressing satisfaction when subordinates meet expectations.
- Management by Exception (active) – focusing attention on irregularities, mistakes, exceptions and deviations from standards; closely monitoring failures and punishing subordinates for their failures; and anticipating problems and making changes before those problems become too bothersome.
- Management by Exception (passive) - failing to intervene until problems become serious; avoiding specifying agreements, clarifying expectations and providing goals;
- Laissez – Faire – showing a total absence of leadership ; avoiding getting involved when important issues arise ; being absent when needed ; avoiding making decisions ; and delaying response to urgent questions subordinates are given.

Burns (1978) espoused that transactional leaders motivate followers by appealing to their self-interests and needs. In order for this exchange to occur, goals and objectives, as well as contingency rewards and inducements; must be offered.

Researchers have sought to identify which leadership style or which elements of particular leadership styles can be linked to positive outcomes such as job satisfaction, follower motivation, and organizational performance. The body of literature in this field is vast; Judge and Piccolo performed a meta-analysis of 626 correlations from 87 sources to relate transformational, transactional, and laissez-faire leadership characteristics to the aforementioned outcomes (Judge and Piccolo, 2004). Their findings support a link between effective leadership and all dimensions of transformational leadership (idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration), as well as a single dimension of transactional leadership, contingent reward. Though transformational and transactional leadership are often presented as being at opposing ends of a spectrum, a combination of select elements from both leadership styles may yield the best results.

### **Cultural Perceptions**

In the headlong drive to incorporate educational technology in schools, the accommodation of the new tools has often taken precedence over the end-users' cultural perceptions toward the media. Many researchers have cautioned about the current lack of attention to cultural beliefs and their impact on ICT adoption in developing countries (Loch, et. al., 2003; Hill et. al., 1998). Researchers suggest that force-fitting the culture to the technology can create an unfavorable climate for the acceptance of ICT in different organizations in the importing country. In fact, Hill et. al. (1998) asserts that, unless taken into consideration, socio-cultural factors may put ICT transfer at risk in certain developing countries. Apparently, the changes developing countries are opting for cannot be attained by simply placing more computers in their schools. Martinez (1999) suggests that one of the major challenges facing developing countries is to make technology an essential part of the culture of the people. In fact, the reverence with which technology is held in technologically developed countries may be in contradiction to the perceptions of cultures that are relationship-oriented (Roblyer, Dozier-Henry & Burnette, 1996: p. 9). Harper (1987, p. 47) contends that cultural factors play an important role in creating negative perceptions toward computers: "One direct cultural cause is people's apprehension that life is becoming too mechanized, so they resist contributing to a "computer culture."

The study of cultural perceptions has been found essential for accounting for teachers' overall attitude toward ICT and for anticipating their future adoption of the new tools (Thomas, 1987; Harper, 1987). In fact, Chen, et. al. (1999) considers cultural perceptions among five main factors that may determine ICT adoption by educators. Unfortunately, however, only a few studies have tried to study the impact of cultural perceptions on the reception/rejection of ICT in education. Apart from the effect of the national culture on technological diffusion in schools, the micro-culture of the school itself may affect such diffusion (Hodas, 1993). Williams-Green, et. al. (1997) contends that the culture developed within an institution or within an organization can act as a barrier to change. For a new technology to be placed into an organization's culture there must be a match of organizational and technological values (Hodas, 1993). Within the school organization, if the technology is not received well by teachers, there must be a mismatch of values between the culture of schools and that of the technology. Watson (1998) found that teachers' inability to negotiate the role of the computer in their practice resulted in their resistance to its use in their classrooms. Therefore, he warned that the mismatch between the culture of techno centric mindedness and the teachers' pedagogic culture results in the alienation of the teachers from the use of technology. On the other hand, Coppola (2000) found that because the norms of school and community encouraged innovation and autonomy, teachers learned not only how to use computers in their teaching but also how to operate them within the constructivist framework. It seems that the integration of ICT in schools cannot be effective unless escorted by supplementary programs that would foster a culture of acceptance amongst teachers, students, and administrators.

From both theoretical and empirical perspectives, cultural perceptions seem to have a significant impact on teachers' adoption of ICT. Unfortunately, much of the early research on computer uses in education has ignored teachers' cultural perceptions toward the new machines (Harper, 1987). Studies focused on the computer and its effect on students' achievement, thus overlooking the psychological and contextual factors involved in the process of educational computerization (Clark, 1983; Thompson, Simonson & Hargrave, 1992). The delicacy of this situation calls for an investigation of teachers' cultural perceptions regarding the introduction of ICT into their schools and society at large.

### **THE STUDY**

In view of the current state of the literature, this study explores how leadership affects the use of ICT in schools. Specifically, it determines the extent to which Malaysian principals use ICT in their schools and identifies their perceived ICT competencies and their leadership style. These are empirical questions, and we provide some preliminary findings for supporting the efficacy of our expectation.

**METHODOLOGY**

This was a descriptive study of an exploratory nature. Creswell (2003) suggests that exploratory studies are most advantageous when “not much has been written about the topic or the population being studied”. The target population in this study was secondary school principals in the state of Selangor and Wilayah Persekutuan, Malaysia during the 2011-2012 school years. The list of school principals was based on the school principal’s directory by Ministry of Education. In this study, a quantitative method was employed to collect data from the population of secondary school principals in Malaysia. Using a survey instrument, quantitative data were collected from a random sample of 520 secondary school principals. The questionnaires are divided into two parts. Part A measures the perceived level of computer use by principals. Part B measures the principal’s characteristics; perceived computer competence; and leadership style (transformational and transactional leadership). Face and content validity of the instruments were established by the panel of experts. Moreover, Cronbach’s alpha was used to measure internal consistency and calculated via the SPSS 19.0 statistical package. The Cronbach’s alpha coefficients for these scales were: Cultural Perceptions Scale=0.611, Transformational leadership style Scale=0.812, Transactional leadership style Scale=0.596 and Level of computer use Scale=0.917.

*Findings*

Of the respondents, 42% were males while 58% were females. About 14% (n= 5) of the respondents were 41 or younger, 45% (n=13) were within the 42-47 age range, 33% (n=9) were within the 48-53 age range, 8% (n=3) were 60 or older. Participants’ responses on their work experience showed that 38% of them had less than 19 years of experience, 42% were between 20 and 25 years, 17% had 26-31 years and 3% had more than 32 years. More than half of the respondents (>70%) held bachelor degrees, 27% held Masters’ degrees, and about 3% held a Doctorate degree. Nearly 90% respondents owned a home computer. Moreover, all of the respondents reported that they have had computer training.

**DISCUSSION**

**Computer Use by Principals**

It can be seen from Table 1 that principals’ perceptions of the level of computer use were moderate; with an overall mean score of 3.29. Also, findings showed that principals spent a few times a week working on their computers. It would seem that Malaysian principals need effective and extensive trainings to raise their proficiency in computer use and integrate technology into their schools. Training needs to be ongoing so principals can continue to learn how to use hardware and software applications within the context of their administrative and instructional responsibilities (Brown, 2001).

Table 1: Percentage, Mean and Standard Deviation of Computer Usage

| Scale                   | Percent (%) |          |      | Mean | SD   |
|-------------------------|-------------|----------|------|------|------|
|                         | Low         | Moderate | High |      |      |
| Internet Use            | 10.1        | 44.2     | 46.7 | 3.49 | 0.78 |
| Hardware & Software Use | 11.7        | 49.8     | 43.2 | 3.27 | 0.67 |
| Instructional Use       | 17.6        | 37.2     | 44.1 | 3.36 | 0.89 |
| Administrative Use      | 17.2        | 49.1     | 36.3 | 3.19 | 0.93 |
| Overall Computer Use    | 12.1        | 54.2     | 32.5 | 3.29 | 0.79 |

**Leadership Style**

**Transformational leadership**

As a composite variable, transformational leadership (refer to table 2) received a mean rating of 2.79 (on a five-point likert scale). Bass and Avolio (1990) suggested that ideal ratings for the transformational variables should be greater than three (>3.0). Principals did not meet this benchmark. Moreover, we found that a representative sample of Malaysian secondary school principals provided fairly often some elements of transformational leadership. This result suggests that some professional development programs should be provided for principals. In fact, if Malaysian principals want to initiate and implement school change through the use of information and communications technology, they must be eager to model the transformational components of charisma



(idealized influence), inspirational motivation, intellectual stimulation and individualized consideration in their schools.

Table 2: Mean and Standard Deviation of the Transformational Leadership Style

| Scale                                     | Mean | SD   |
|---|------|------|
| Idealized influence (attributed)          | 2.97 | 0.68 |
| Idealized influence (behavior)            | 2.87 | 0.67 |
| Inspirational motivation                  | 2.69 | 0.79 |
| Intellectual stimulation                  | 2.56 | 0.83 |
| Individualized considerations             | 2.86 | 0.71 |
| Overall Transformational leadership style | 2.79 | 0.62 |

### Transactional leadership

Descriptive analyses revealed that the respondents (refer to table 3) have a mean score of 2.38 (SD=0.31). It seems that principals display sometimes some elements of transactional leadership. In other words, this result suggests that principals sometimes tend to focus on task completion and teacher compliance, rely quite heavily on organizational rewards and punishments to influence teacher performance, and emphasize work standards, assignments, and task-oriented goals (Bass, 1998).

Table 3: Mean and Standard Deviation of the Transactional Leadership Style

| Scale                                  | Mean | SD   |
|--|------|------|
| Contingent reward                      | 3.13 | 0.55 |
| Management-by-exception-active         | 2.89 | 0.62 |
| Management-by-exception-passive        | 1.12 | 0.59 |
| Overall Transactional leadership style | 2.38 | 0.31 |

### Cultural Perceptions

Participants were asked to respond to 10, likert scale type questionnaire dealing with their perceptions about computers' cultural relevance to and impact on Malaysian schools. Cultural perceptions were represented by a mean score on a 5 point likert scale where 5 (strongly agree) represents the maximum score of the scale and 1 (strongly disagree) represents the minimum score. Table 4 illustrates the frequency of respondents' feedback to the cultural perceptions scale.

Table 4: Frequency Percentages on the Cultural Perceptions Scale

| N | Cultural Perceptions Scale  | SD (%) | D (%) | N (%) | A (%) | SA (%) |
|---|---|--------|-------|-------|-------|--------|
| 1 | Computers will not make any difference in our classrooms, schools, or lives           | 23.3   | 50.7  | 17.3  | 7.9   | 0.8    |
| 2 | Principals need to know how to use computers for their future jobs                    | 1.1    | 3.3   | 9.7   | 60.6  | 25.3   |
| 3 | Students prefer learning from teachers to learning from computers                     | 2.8    | 28.3  | 39.1  | 23.6  | 6.2    |
| 4 | Knowing about computers earns one the respect of others                               | 0.5    | 13.7  | 21.3  | 48.9  | 15.6   |
| 5 | We need computers that suit better the Malaysian culture and identity                 | 2.5    | 3.4   | 8.7   | 63.1  | 22.3   |
| 6 | Computers will improve our standard of living   | 2.5    | 6.1   | 8.7   | 50.4  | 32.3   |
| 7 | Using computers would not hinder Malaysian generations from learning their traditions | 0.5    | 3.3   | 8.2   | 59.7  | 28.3   |
| 8 | Computers are proliferating too fast  | 16.7   | 31.1  | 29.7  | 16.1  | 6.4    |

|    |   |     |      |      |      |      |
|----|---|-----|------|------|------|------|
| 9  | People who are skilled in computers have privileges not available to others | 1.3 | 12.9 | 21.3 | 48.9 | 15.6 |
| 10 | The increased proliferation of computers will make our lives easier         | 0.5 | 6.1  | 8.7  | 53.5 | 31.2 |

Scale: SD=Strongly Disagree, D=Disagree, N=Neutral, A=Agree, SA=Strongly Agree

From a school culture perspective, the majority of the respondents agreed or strongly agreed that school principals need to know how to use computers for their future jobs (85.9%), and that the increased proliferation of computer will make our lives easier (84.7%). Also, a high percentage of the respondents disagreed or strongly disagreed with the negatively stated item 1, indicating that computers will make difference in their classrooms, schools, and lives (74%). However, a high percentage of them (39.1%) were neutral about whether or not students prefer learning from teachers to learning from computers. From a national culture viewpoint, the majority of the respondents agreed or strongly agreed that knowing about computers earns one the respect of others (64.5%), contribute to improving their standard of living (82.7%), and computers would not hinder Malaysian generations from learning their traditions (88%).

As can be seen from Table 5, the overall mean on the cultural perceptions scale was 4.0, with a standard deviation of 0.53, indicating that principals' perceptions of the cultural relevance of computers were positive. In other words, principals had positive perceptions of the value, relevance, and impact of ICT as it relates to the cultural norms in Malaysian schools. So, principals did not feel ICT as a threat for Malaysian culture.

Table 5: Percentage, Mean, and Standard Deviation of the Cultural Perceptions

| Scale                | Percent (%) |         |          | Mean | SD   |
|----------------------|-------------|---------|----------|------|------|
|                      | Negative    | Neutral | Positive |      |      |
| Cultural Perceptions | 0.0         | 26.7    | 73.2     | 4.00 | 0.53 |

#### The Relationship between the level of computer use by principals and the Independent Variables

The association between computer use and independent variables were explored by using the correlation analysis. The Pearson Product-moment was performed to identify independent variables that individually correlate with the dependent variable. The correlation matrix shows a number of significant relationships between level of computer use by principals and the independent variables (Table 6).

Table 6: Summary of the Correlation Matrix of Independent Variables and Computer Use

| Variable                    | Pearson Correlation | Point-Biserial/<br>Biserial Correlation | Sig. (2-tailed) |
|-----------------------------|---------------------|---|-----------------|
| Computer Use                | 1                   |   |                 |
| Cultural Perception         | 0.47**              |   | 0.000           |
| Transformational Leadership | 0.63**              |   | 0.000           |
| Transactional Leadership    | 0.14                |   | 0.08            |

\*\* p<.01; \*p<.05

#### Cultural Perceptions and the Level of Computer Use

The relationship between cultural perception and the level of computer use was investigated using Pearson product-moment correlation coefficient. Preliminary analyses were performed to ensure no violation of the assumptions of normality, linearity, and homoscedasticity. There was a moderate and positive correlation between the two variables [ $r = 0.47$ ,  $n = 520$ ,  $p < 0.05$ ], indicating that as principals' perceptions of the value, relevance, and impact of computers as it relates to the cultural norms in society and school increase, level of computer use will improve as well. As shown in Table 6, the p-value was smaller than the alpha value ( $p = 0.0001 < 0.05$ ) so it can be concluded that there was significant relationship between cultural perception and level of computer use at 0.05 level of significance. The study's results are consistent with Rogers' premise regarding the role of social norms in the diffusion of innovations, and also with Thomas's "Cultural Suitability" hypothesis, which posits that the acceptance of a new technology depends to a large extent on its compatibility with the existing culture. Specially, principals in this study acknowledged the importance of ICT for their educational system and society. It reflects the influence of their cultural norms on their perception of ICT.



### **Transformational Leadership and Level of Computer Use**

According to Table 6, there was a moderate and positive correlation between the two variables [ $r = 0.63$ ,  $n = 520$ ,  $p < 0.05$ ], indicating that as the level of principals' transformational leadership increase, their level of computer use will improve as well. Also, the findings showed that the p-value was smaller than the alpha value ( $p = 0.0001 < 0.05$ ) so it can be concluded that there was a significant relationship between transformational leadership style and level of computer use by principals at 0.05 level of significance. This result suggests that transformational leadership has a positive effect on the level of computer use by principals. In this way, the applicability of the transformational leadership to information technology projects was well supported by the results of this study.

### **Transactional Leadership and Level of Computer Use**

The relationship between transactional leadership and level of computer use was investigated using Pearson product-moment correlation coefficient. Based on  $r = 0.14$ , there was negligible relationship between transactional leadership and level of computer use. This result implies that transactional leadership style cannot influence the level of computer use by principals. This result is consistent with Leithwood's (1994) arguments that transactional practices alone do not lead to systematic improvement and benefits in transactional leadership can only be seen when paired with characteristics of transformational leadership.

### **CONCLUSION**

This paper raises some issues about the role of principals in technology integration, determines the extent to which Malaysian principals use ICT in their schools and identifies their perceived ICT competencies and their leadership style. Findings indicate that principals are using computers two or three times a week for a variety of instructional and administrative tasks. In fact, if Malaysian principals want to be successful for their new role as technology leaders, they must understand the role of ICT in their work life and acquire appropriate skills to use this knowledge. In other words, they must be proficient in utilizing the computer to assist in administrative and instructional functions. For example, they should understand word processing, how to construct and report from a data base, how to use a spreadsheet to solve financial problems, how to create reports and link them with a mail-merge package, how to create and maintain files on a disk, how to use hardware available in their district, and how to use specific applications programs in use in their school.

Hence, principals should use of technology and realize the role that technology can play in teaching and learning process. Successful adoption of computer is important for school principals who must use computers and model their use for their staff (Tiede, 1992). If this modeling is successful, the staff may then model the use of computers for students. In this way, principals who do not have positive expectations for computer use or do not instill or support a culture of technology use; integration is inhibited (Anderson & Dexter, 2000). Therefore, principals should have knowledge, skill and positive attitudes towards implementing ICT in schools and also they must know new administrative techniques to manage their schools effectively.

In the age of technology and information, Malaysian principals should become competent in using computers. They should use computers effectively to perform their daily responsibilities. In fact, their ability to use computers helps them become more effective managers in using and analyzing the information that is available to them. The effective use of the computer in management, communication, and decision-making can increase their accountability. Findings of this study indicated that Malaysian secondary school principals are lacking in proficiency on database, spreadsheet, presentation/ multimedia software, the Internet, and information seeking as compared with other technology competencies. Hence, school districts and principals' centers should provide professional development for principals to become proficient in all the competency areas. Also, they should implement an evaluation system that ensures school principals are working with the technologies at a proficient level.

It is also imperative that the Ministry of Education comes up with policies that will guide the use of ICT in schools. The government seems to be lagging behind because whereas computer studies has been introduced in secondary schools as part of the national curriculum, it has not kept up with the provision of the necessary infrastructure both physical and human resources. For example, there has been no teacher training course with computer studies as a teaching subject. ICT therefore seems to have been left to the ingenuity of the schools. This may explain the low levels of ICT integration among classroom teachers and the apparent advantage that schools with a principal who has ICT knowledge have. The principals have therefore a professional responsibility and accountability to ensure that they are well trained in ICT and that their institutions have management strategies to enable them to achieve appropriate ICT integration in teaching and learning. 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 are more competent in ICT are more likely to achieve success in their schools.

Attention to cultural beliefs and their impact on ICT adoption are very important in developing countries (Loch et. al., 2003) because socio-cultural factors may put ICT transfer at risk (Albirini, 2006b). “Duplicating strategies from other developed countries without any consideration about cultural adaptations of technologies might be less effective and successful” (Kousha & Abdodi, 2004, p.8). According to Awamleh and Gardner (1999), implementation of a new technology is not finished with installation of the technology and explanation of how to use it. In fact, the new technology should be accepted by the receiving society (Asemi, 2006). It must not contradict the values of society. Findings from this study indicated that principals had positive cultural perceptions of ICT in society and school. Such principals could use technology and create a suitable environment and culture to the integration of technology in schools. This cultural perception relates the principals’ success to their individual ability to articulate and influence norms and values. Hence, understanding the cultural values is as important as understanding the technological benefits. Principals who are responsible for adopting and implementing technology in school must be aware of its societal and organizational cultural impacts.

### LIMITATIONS

Although we have found several encouraging results, it is important to recognize that the current findings also have limitations. First, the sample size should be increased because using data from a larger number of respondents will permit more powerful findings. Second, participants of this study completed a self-reported instrument. Given the self-reporting nature of this instrument, it was quite possible that principals overrated their proficiency or underrated their proficiency. These ratings may not reflect the true proficiency levels of the principals. In spite of these limitations, this study will be useful for policy makers, providers of professional development programs for principals and for system level decision makers to support mechanism and strategies to assist principals to develop their knowledge, skills and their leadership style. Thus, principals will understand the critical role that they play in facilitating the implementation of ICT in schools to improve teaching, learning and administrative processes. Therefore, we need leaders, not bosses, who help us develop a clearer vision and shed light in the moments of dark confusion (Wheatley & Margaret, 1992).

### REFERENCES

- Albirini, A. (2006) ‘Cultural perceptions: The missing element in the implementation of ICT in developing countries’ *International Journal of Education and Development using Information and Communication Technology (IJEDICT)*, 2:1, 49-65.
- Anderson, R. E., & Dexter, S.L. (2000). *School Technology Leadership: Incidence and Impact (Teaching, Learning, and Computing: 1998 National Survey Report#6)*. Irvine, CA: Center for Research on Information Technology and Organizations, University of California, Irvine.
- Asemi, F. 2006. “Information Technology and National Development in Iran”. *IEEE, International Conference on Hybrid Information Technology*
- Attaran, M., Vanlaar, I. (2001). Managing the use of school technology: and eight step guide for administrators. *Journal of Management Development*, 20 (5), 393-401.
- Avolio, B. J., Bass, B. M., & Jung, D. (1999). Re-examining the components of transformational and transactional leadership using the multifactor-leadership questionnaire. *Journal of Occupational and Organizational Psychology*, 72, 441-462.
- Awamleh, R., and Gardner, W.L. (1999). Perceptions of leader charisma and effectiveness: the effects of vision content, delivery, and organizational performance. *Leadership Quarterly*, 10,345-73.
- Baily, G. D. (1997). What technology leaders need to know: The essential top 10 concepts for technology integration in the 21st century. *Learning & Leading with Technology*, 25(1), 57-62.
- Banerji, P. & Krishnan, V.R. (2000). Ethical preferences of transformational leaders: An empirical investigation. *Leadership and Organization Development Journal*, 21(8), 405–413.
- Bass, B. M. & Riggio, R. E. (2006). *Transformational leadership*. Mahwah, NJ: Erlbaum.
- Bass, B. M. (1985). *Leadership and performance beyond expectations*. New York: I press
- Bass, B. M. and Avolio, B. j. (1994). *Improving Organization Effectiveness: through transformational leadership*. Thousand Oaks: Sage.
- Bass, B. M., & Avolio, B. J. (1997). *Full-range leadership development: Manual for the multifactor leadership questionnaire*. Palo Alto, CA: Consulting Psychologists Press.
- Bass, B.M. & Avolio, B. J. (2000). *MLQ Multifactor Leadership Questionnaire (2<sup>nd</sup> Ed.)*. Redwood, CA: Mind Garden, Inc
- 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.

- Beaumont, N., Costa, C., Shoal, A., & Purushothaman, K. (2004). The role and impact of information technology in Malaysia Business. Internet File
- Becker, H. J. (1993). Teaching with and about computers in secondary school. *Communication of the Association for Computing Machinery*, 36(5), 69-72.
- Bennett, J. (1996). Why leaders can't lead: The unconscious conspiracy continues. Francisco: Jossey-Bass.
- Bennis, W. (2001). Leading in unnerving times. *MIT Sloan Management Review*, 42, 97-102.
- Bottery, M. (2004). *The Challenges of Educational Leadership: Values in a Globalized Age*. London: Paul Chapman.
- Brooks-Young (2002). *Making technology standards work for you: A guide for school administrators*. Eugene, OR: ISTE
- Brown, L. M., & Posner, B. Z. (2001). Exploring the relationship between learning and leadership. *Leadership & Organization Development Journal*, 22(6), 274-280.
- Brown, R. (2001). The transition from scientific calculators to computer algebra systems in one educational system. In Wei-Chi Yang & Sung-Chi Chu & Zaven Karian & Gary Fitz-Gerald (Eds.), *Sixth Asian Technology Conference in Mathematics* (pp. 311-320). RMIT Melbourne: ATCM Inc.
- Burns, J. M., (1978). *Leadership*. New York: Harper and Row.
- Butzin, S. (1992). Integrating technology into the classroom: Lessons from the project CHILD experience. *Phi Delta Kappan*, 74(4), 330-333.
- Byrom, E., Bingham, M. (2001). Factors influencing the effective use of technology for teaching and learning: Lessons learned from the SEIR\*TEC intensive site schools. (2nd ed.). Greensboro, N.C.: University of North Carolina at Greensboro.
- Cafolla, R., & Knee, R. (1999). Factors limiting technology integration in education: The leadership gap. Retrieved November 18, 2004 from <http://www.coe.uh.edu/insite/elec-pub/html1995/152.htm>.
- Charbonneau, D. 2004. Influence tactics and perceptions of transformational leadership. *The Leadership & Organization Development Journal*, 25(7): 565-576.
- Chen, A., Mashhadi, A. Ang, D. & Harkrider, N.(1999). "Cultural issues in the design of technology-enhanced learning environments", *British Journal of Educational Technology* vol. 30, no. 3, pp. 217-230.
- Clark, R. (1983). "Reconsidering research on learning from media", *Review of Educational Research*, vol. 53. no. 4, pp. 445-459.
- Coppola, E. M. (2000). *The power of culture for professional learning: How teachers learn to use computers for constructivist teaching and how the school's organizational culture can support them.* (Doctoral Dissertation, Harvard University, 2000). ProQuest Digital Dissertations(UMI No. AAT 9968298).
- Coughlin, W. (1994). The balance of a lifetime. *Association Management*, 46(1), 67-72.
- Cradler, J. (1999). *Implementing technology in education: Recent findings from research and evaluation studies* Retrieved May 3, 2005 from [http://www.education.lanl.gov/RESOURCES/Model\\_Nets/team/team\\_fw1.html](http://www.education.lanl.gov/RESOURCES/Model_Nets/team/team_fw1.html)
- Creswell, J. W. (2003). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (2ndEd.). Sage Publications.
- Cronbach, L.J. & Meehl, P.E. (1955). Construct validity in psychological tests. *Journal of Psychological Bulletin*, 52,281-302.
- Dede, C. (1992). Leadership without followers. *The Computing Teacher*, 20(6), 9-11.
- Dimmock, C. and Walker, A. (2000), Introduction: justifying a cross-cultural comparative approach to school leadership and management, *School Leadership and Management*, 20 (2), 137-41.
- Dinham, S. (2005). Principal leadership for outstanding educational Outcomes. *Journal of Educational Administration*, 43 (4), 338-356.
- Eib, B. J., & Mehlinger, H.D. (1998). Technology in education: From segregation to integration. *The High School Magazine*, 6(1).
- Employment Outlook 2012. (2012). [ONLINE]. Knowledge Worker Exchange Sdn Bhd. Available: [www.kwx.com.my/kwx/ASP/Employee/EMsurveylisting.asp](http://www.kwx.com.my/kwx/ASP/Employee/EMsurveylisting.asp). [2012, July, 12].
- Felton, F.S. (2006). *The use of computers by elementary school principals*. (Doctoral Dissertation, Virginia Polytechnic Institute and State University, 2006).
- Fiske, E., Hammond, B. (1997). Identifying quality in American colleges and universities. *Planning for Higher Education*, 26 (1), 8-15.
- Flanagan, L. and Jacobsen, M. (2003). Technology Leadership for the twenty first century principal. *Journal of Educational Administration*, 41(2), 124-142.
- Fleit, L. (2000). Panel on the Future of the Profession. *Educause Review*, January/February.
- Flowers, c. p., Algozzine, R.F. (2000). Development and Validation of Scores on the Basic Technology Competencies for Educators Inventory. *Journal of Educational and Psychological Measurement*, 60 (3), 411-418

- Frambach, R.T. and Schillewaert, N. (2002). Organizational innovation adoption: a multi-level framework of determinants and opportunities for future research. *Journal of Business Research*, 55: 163-76.
- Fullan M. (2001). *Leading in a Culture of Change*. San Francisco: Jossey-Bass.
- Fullan, M. (2003). *The moral imperative of school leadership*. Thousand Oaks, CA: Corwin.
- Gibson, I. W. (2002). PT3 and T3L—teaching tomorrow’s technology leaders: Preparing school leaders to use technology. Proceedings of SITE 2002: Society for Information Technology & Teacher Education International Conference. Nashville, TN
- Gunter, H. (2001), *Leaders and Leadership in Education*, London, Paul Chapman.
- Harper, D. O. (1987). “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* (pp.35-64). Pergamon Press, Oxford
- Hill, C., Loch, K., Straub, D. & El-Sheshai, K. (1998). “A qualitative assessment of Arab culture and information technology transfer”, *Journal of Global Information Management*, vol. 6, no. 3, pp. 29-38.
- Hodas, S. (1993). “Technology refusal and the organizational culture of schools”. *Education Policy Analysis Archives*, vol. 1 no. 10. Retrieved from <http://epaa.asu.edu/epaa/v1n10.html>.
- Holinga, M. J. (1999). Project LINCOL’N’. *Learning & Leading with Technology*, 26(7), 54-60.
- Hope, W.C., Kelly, B., & Guyden, J. (2000). *Technology Standards for School Administrators: Implications for Administrator Preparation Programs*. Paper presented at the Information Technology and Teacher Education Educational Conference, Sand Diego.
- Howell, J.M. and Avolio, B.J. (1993). Transformational leadership, transactional leadership, locus of control, and support for innovation: key predictors of consolidated-business-unit performance. *Journal of Applied Psychology*, 78 (6), 891-902.
- Johnston, M., Cooley, N. (2001). *Supporting new models of teaching and learning through technology*. Arlington, VA: Educational Research Service.
- Jonassen, D. H., Peck, K. L., & Wilson, B. G. (1999) *Learning with technology: a constructivist perspective*, Upper Saddle River, NJ: Prentice Hall.
- Judge, T. A., & Piccolo, R. F. (2004). Transformational and Transactional Leadership: A Meta-Analytic test of their relative validity. *Journal of Applied Psychology*, 89(5), 755-768.
- Jung, D. & Avolio, (2000). Transformational and transactional leadership and their effects on creativity in groups. *Creativity Research Journal*, 13(2), 185-195.
- Jung, D.I., Chow, C., & Wu, A., (2003). The role of transformational leadership in enhancing organizational innovation: Hypotheses and some preliminary findings. *The Leadership Quarterly*. 14:525–544.
- Kousha, K. and Abdoli, M. (2004) ‘Iran’s National ICT Education plan’ paper presented at the World Library and Information Congress: 70th IFLA General Conference and Council, 22-27, August, Buenos Aires, Argentina.
- Kouzes, J.M., & Posner, B.Z. (1989). *The leadership challenge: How to get extraordinary things done in organizations*. An Francisco: Jossey-Bass.
- Kozma, R. B., & Croninger, R. G. (1992). Technology and the fate of at-risk students. *Education and Urban Society*, 24(4), 440-453.
- Krajcik, J., Soloway, E., Blumenfeld, P., & Marx, R. (1998). *Scaffolder technology tools to promote teaching and learning science*. Inc. Dede (Ed.), ASCD year book (pp. 31-45). Alexandria, VA: Association for Supervision and Curriculum Development.
- Lee, J. (2005). Effects of leadership and leader-member exchange on commitment. *Journal of Leadership & Organization Development*, 26(8), 655-672.
- Leithwood, K. (1994). Leadership for School Restructuring. *Journal of Educational Administration Quarterly*, 30(4), 498-518.
- Levinson, E. (1990). Will technology transform education or will the schools co-opt technology?. *Phi Delta Kappan*, 72(2), 121-126.
- Loch, K, Straub, D. & Kamel, S. (2003). “Diffusing the Internet in the Arab World: the role of social norms and technological culturaltion”, *IEEE Transactions on Engineering Management*, vol. 5, no. 1, pp. 45-63
- Lockard, J., Abrams, P. D., & Mary, W. A. (1990). *Microcomputers for educators* (2nd Ed.). Northern Illinois University.: Harper Collins.
- Lowe, K., & Galen, G. (1996). Effectiveness correlates of transformational leadership: A meta-analytic review of the MLQ literature. *Leadership Quarterly*, 7(3), 385-426.
- Lowe, K.B., Kroeck, K.G., & Sivasubramaniam, N. (1996). Effectiveness correlates of transformational and transactional leadership: A meta- analytic review of the MLQ literature. *Leadership Quarterly*, 7, 385–425.
- Lu, Q. (2001) ‘Learning and innovation in a transitional economy: the rise of science and technology enterprises in the Chinese information technology industry’ *International Journal of Technology Management*, Vol. 21 (1/2) pp 76-92.

- Macneil, A., Delafield, D. (1998). Principal Leadership for Successful School Technology Implementation. Paper presented in the Society for Information Technology & Teacher Education International Conference, March 10-14, Washington.
- Martinez, E. (1999). “Boosting public understanding of science and technology in developing countries”, Paper presented at World Conference on Science, 1999.
- Michael, S. (1998). Best practices in information technology (IT) management: insights from K-12 schools’ technology audits. *International Journal of Educational Management*. 12 (6), 277-88.
- Mills, Steven C., Tincher, Robert C. (2002). Be the Technology: Redefining Technology Integration in Classrooms. In C. Crawford et al. (Eds.), *Proceedings of Society for Information Technology and Teacher Education International Conference 2002* (pp. 2334-2338). Chesapeake, VA: AACE.
- Northouse, P. (1997). *Leadership: Theory and Practice*. Thousand Oaks, CA: Sage Publications.
- Otto, T.L., and Albion, P.R. (2004). Principals’ Beliefs about Teaching with ICT. *International Conference of the Society for Information Technology and Teacher Education*. (March, Atlanta, Georgia).
- Picciano, A. G. (1998). *Educational leadership and planning for technology* (2nd ed.). Upper Saddle River, NJ: Prentice-Hall Inc.
- Popper, M. & Zakkai, E. (1994). Transactional, Charismatic and Transformational Leadership: Conditions Conducive to their Predominance. *Journal of Leadership & Organization Development*, 15(6), 3-7.
- Raizen, S.A., Sellwood, P., Todd, R.D. and Vickers, M., 1995. *Technology Education in the Classroom*, Jossey-Bass, San Francisco, CA.
- Rieber, L. & Welliver, P. (1998). Infusing educational technology into mainstream educational computing’, *International Journal of Instructional Media*, 16(1), 21-31.
- Roblyer, M. D., Dozier-Henry, O. & Burnette, A. P. (1996). “Technology and multicultural education: the ‘uneasy alliance’”, *Educational Technology* vol. 36, no. 6, pp. 5-12.
- Rogers, E. M. (1995). *Diffusion of innovations* (4th Ed.). NY: The Free Press
- Ross, J., McGraw, T., & Burdette, K.,(2001). *Toward an effective use of technology in education: A summary of research*. Charleston, WV: Institute for the Advancement of Emerging Technologies in Education at AEL.
- Rowden, R.W. (2000).The relationship between charismatic leadership behaviors and organizational commitment. *Leadership & Organization Development Journal*,21, 30-5.
- Salzano, J. (1992). The key to successful computerization is through good trainers. Paper presented at the International Conference on Technology and Education. Paris, France.
- Schein, E.H. (1992). *Organizational Culture and Leadership*, 2nd edn. San Francisco: Jossey- Bass.
- Schepers, J. & Wetzels, M. (2005). Leadership styles in technology acceptance. *Journal of Managing Service Quality*, 15 (6), 496-508
- Schiller, J. (2003). Working with ICT Perceptions of Australian principals. *Journal of Educational Administration*, 41(2), 171-185.
- Schillewaert, N., Ahearne, M.J., Frambach, R.T. and Moenaert, R.K.,(2005). The adoption of information technology in the sales force. *Industrial Marketing Management*.34:323-36.
- Sheingold, K., Hadley, M. (1990). *Accomplished teachers: Integrating computers into classroom practice*. New York: Center for Technology in Education, Bank Street College of Education.
- Slavin, R. E. (1991). Reading effects of IBM’s Writing to Read” program: A review of evaluations. *Educational Evaluation and Policy Analysis*, 13(1), 1-11.
- Smith, G. (1999). *Leading and Managing Learning Technologies*. Paper presented at the Connected Learning and Learning Technologies in Schools Conference, Brisbane.
- Stegall, P. (1998). The Principal-Key to Technology Implementation. Paper presented at the 95th Annual Meeting of the National Catholic Education Association, Los Angeles, CA.
- Stevens, D. J. (1992). Why computers in education may fail. *Education*, 104(4), 370-376.
- Taylor, L. (1992). Teaching mathematics with technology. *Arithmetic Teacher*, 40(3), 187-191.
- Thomas, R.M. (1987). “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* (pp.25-34). Pergamon Press, Oxford.
- Thomas, W.R. (2001). *Education technology: Are school administrators ready for it* Southern Regional Education Board, Atlanta, GA. Retrieved June 30, 2005, from <http://www.sreb.org/>
- Tiede, L. J. (1992). A study of selected elementary school principals' use of computers for administrative purposes. (Doctoral dissertation, Northern Illinois University, 1992). *Dissertation Abstracts International*, 53(06A), 1760. UMI No. AAG9230727).
- Tipton, F.B. (2002). Bridging the digital divide in Southeast Asia: Pilot agencies and policy implementation in Thailand, Malaysia, Vietnam, and the Philippines. *ASEAN Economic Bulletin*, 19(1), 83-99.
- Watson, D. M. (1998). “Blame the techno centric artifact! What research tells us about problems inhibiting teacher use of IT”. In G. Marshall, & M. Ruohonen (Eds.), *Capacity Building for IT in Education in Developing Countries* (pp. 185-192). Chapman & Hall, London.

- Wheatley, Margaret J. (1992). *Leadership and the New Science*, Berrett-Koehler, San Francisco.
- Wiburg, K. M. (1997). The dance of change: Integrating technology in classrooms. In D. L. Johnson, C. D. Maddux, & L. Liu (Ed.), *Using technology in the classroom* (pp. 171-184), New York: The Haworth Press, Inc.
- Williams-Green, J., Holmes, G., Sherman, T. M. (1997). “Culture as a decision variable for designing computer software”, *Journal of Educational Technology Systems*, vol. 26, no. 1, pp. 3-18
- Wilmore, D., Betz, M. (2000) *Information Technology and Schools: the principal's role*. *Educational Technology and Society*. Available at: [http://ifets.ieee.org/periodical/vol\\_4\\_2000/v\\_4\\_2000.html](http://ifets.ieee.org/periodical/vol_4_2000/v_4_2000.html) 105
- World Employment Report (2010). *Life at work in the information economy*. International Labour Organization. [ONLINE]. Available: [www.ilo.org/public/english/support/publ/wer/overviews.htm](http://www.ilo.org/public/english/support/publ/wer/overviews.htm). [August, 2013, 19].
- Yee, D. (2000). Images of school principals' information and communications technology leadership. *Journal of Information Technology for teacher Education*, 9 (3), 287-302.
- Yukl, G. A. (1999) *Leadership in Organizations*, Fifth Edition, Upper Saddle River, NJ, Prentice Hall.