

Transformational Leadership Role of Principals in Implementing Informational and Communication Technologies in Schools

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Abstract: The implementation of information and communication technologies is very important to schools. Transformational leaders provide greater contributions to implement technology in education. This paper examines the relationship between two independent variables (computer competence and computer use) and transformational leadership role of principals in implementing ICT in schools. This paper based on responses from 320 school leaders in Iran, reports that computer competence and ICT usage are key factors that influence technology leadership behaviors. It is suggested that decision makers should provide professional development for principals to become proficient in all the competency areas.

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1. Introduction

Investments in information and communication technology (ICT) for enhancing formal and non-formal education systems are essential for schools improvement (Tong & Trinidad, 2005). According to Betz (2000), information technology will only be successfully implemented in schools if the principal actively supports it, learns as well, provides adequate professional development and supports for his/her staff in the process of change. In fact, school principals have a main responsibility for implementing and integrating ICT in schools (Schiller, 2003). Anderson and Dexter (2005) carried out a study on technology leadership behaviors of school principals and found that “although technology infrastructure is important, technology leadership is even more necessary for effective utilization of technology in schools” (p.49). Moreover, various other research studies support the literature that leadership is an important key factor in effective use of technology in education (Schiller, 2003; Anderson & Dexter, 2005). Therefore, it can be said that technology leadership behaviors are important to successful implementation of educational technology plans (Chang, Chin & Hsu, 2008).

It is widely accepted that the transformational leadership behaviors of principals play a crucial role in technology integration into the curriculum and promoting students’ learning (Betz, 2000). In fact, transformational leaders pay attention to the needs and desires of their followers and help them get their highest potential (Crawford, 2005). According to

Schepers, Wetzels and Ruyter (2005), transformational leaders often exhibit strong values and ideals and can motivate people to act in ways that support the organization above their own interest. Based on transformational theory, principals should be innovative, competent, and role models to those that they lead. This declaration was supported by Dawon and Rakes (2003), who stated that principals as transformational leaders play a critical role in the successful implementation of school initiatives and they act as a role model. Therefore, it is important to identify the factors that impact the transformational leadership role of principals in implementing ICT in schools. “Principals as transformational leaders of school improvement, should have competence in using computers (Schiller, 2003), realize the importance of the new technologies and model the use of technology to show how technology can positively impact the school environment (Stuart, Mills & Remus, 2009).

“However, although school leaders may have formally mandated technology leadership responsibilities this can be problematic since they often do not have the training or background to feel confident in dealing with technology” (Stuart et al., 2009, p.733). Previous research studies indicated that using computer and ICT competence are important factors that influence role of principals in implementing ICT in schools. However, despite the importance role of the principals in supporting technology integration, there has been little research on using of ICT by principals and their transformational leadership role in implementing ICT

in Iranian schools. The current study is based on this pressing need and addresses the following questions:

- 1) What is the relationship between level of computer use by secondary school principals and their transformational leadership role in implementing ICT in schools?
- 2) What is the relationship between principals' perceptions of their level of computer competence and their transformational leadership role in implementing ICT in schools?

2. Methodology

A descriptive study of an exploratory nature was used in this study. In fact, exploratory studies are most useful when "not much has been written about the topic or the population being studied" (Creswell, 2003). Based on the secondary principals Directory, the total number of Iranian secondary school principals in the province of Tehran was 1312 during the 2007-2008 school years. This Directory is maintained and updated on a quarterly basis by Tehran Department of Education. To obtain the required data for this study, three questionnaires were used. They were distributed among 320 sample principals selected randomly from the population. Stratified sampling was utilized in this study. In fact, Tehran is the biggest cities in Iran and consists of 19 educational areas. In each area, the population of secondary school principals is not homogeneous. When sub-populations vary significantly, it is advantageous to sample each subpopulation (stratum) independently. So, we used stratified sampling method to have less variability in selection.

In addition, a panel of expert established face and content validity of these instruments. Also, internal consistency of them was obtained by Cronbach's alpha that was calculated by the SPSS 16 statistical package. The Cronbach's alpha coefficients for these scales were: Computer Competence Scale=0.97, Transformational leadership style Scale=0.812 and Level of computer use Scale=0.917. To conduct this study, permission was gained from the Ministry of Education and the research department of Tehran's Ministry of Education. They permitted us to attend the principals' meeting in each educational area of the Ministry of Education. A total of 350 questionnaires were distributed among all members of the sample in these sessions. The completed questionnaires were collected at the end of these sessions. Principals who could not fill their questionnaires completely were given approximately three weeks from that date to return the questionnaires by mail. In all, 350 surveys were distributed, 320 were returned, resulting in a return rate of 91.4%. All of the returned surveys, a total of

320, were used in the analysis. In this study descriptive statistics were used to describe and summarize the properties of the mass of data collected from the respondents (Airasian & Gay, 2000). Correlation analysis was used to determine the relationship between each of the independent variables and transformational leadership role of principals in implementing ICT in school.

3. Findings and Discussion

Study results showed that about 48.4% of the respondents were female and about fifty point three percent of the respondents were within the 45-54 age range. Approximately forty five percent of the respondents had more than 21 years of experience. About fifty three percent of the principals worked in private schools, and sixty point three percent held bachelor's degrees. Most of the principals stated that they had attended computer training programs (95.5%). Regarding the type of training, about fifty three percent of them stated that they received their training through in-service training.

3.1. The Association between Transformational Leadership and Independent Variables

The relationship between Transformational leadership and independent variables (level of computer use and computer competence) were explored by using the Pearson Product-moment correlation. This analysis was used to find the strength and direction of the linear relationship between two variables (independent variable and dependent variable).

Table 1: Summary of the Correlation Matrix of Independent Variables and Transformational Leadership

Variable	Pearson Correlation	Sig. (2-tailed)
Transformational Leadership	1	
Computer Competence	0.61**	0.000
ICT use	0.70**	0.000

According to Table 1, computer competence was significantly linked to transformational leadership [$r=0.61$, $n=320$, $p < 0.01$]. Moreover, we found that there was a strong and positive correlation between computer use and transformational leadership [$r = 0.70$, $n=320$, $p < 0.05$]. Based on these results, we can conclude that principals who use computer frequently in their administrative and instructional tasks and have higher levels of skill and

knowledge in ICT use will exhibit more transformational leadership behaviors in their schools and acted as strong role models for the effective use of technology in support of teaching and learning. Such principals can transmit a vision or a sense of mission for comprehensive integration of technology, foster an environment and culture conducive to the realization of that vision and create enthusiasm in followers, applied technology to enhance their professional practice and to increase their own productivity. This finding was supported by Stuart et al.' (2009) study. They found that school leaders who are ICT competent and use computer in their administrative and instructional tasks are effective technology leaders. Also, study result is consistent with Schiller's (2003) proposition that ICT competence is a key factor that influence technology leadership role of principals. Therefore, principals should understand the role of ICT in their work life and learn appropriate skills to use this knowledge (Stuart et al., 2009) in order to encourage teachers to use technology in their teaching and learning process.

3. Conclusion

Role of principals in influencing, empowering and supporting teachers in successful ICT implementation in schools is very important (Yuen, Law & Wong, 2003). In fact, principals who act as transformational leaders can encourage creativity, open-mindedness and facilitate conditions and events that create a positive environment for technology adoption (Frambach & Schillewaert, 2002; Schillewaert et al., 2005).

According to Rogers (2003), such principals play an essential role in the diffusion and adoption of innovations. The leadership style exhibited by the leader could help or hinder technology infusion. Findings of this study showed that principals spent a few times a week working on their computers and they had moderate competence in using computer. Also, study results indicated that principals' computer competence and level of computer use by principals have a significant association with transformational leadership style. It is suggested that Iranian principals should be active learners in this fast changing arena. They should never stop learning and honing their skills but they must maintain a personal plan for self-improvement and continuous learning (Bennis, 1990). Principals should improve their style of leadership and be familiar with current research and best practices. Furthermore, they should use new technologies and model the use of them to change and improve the environment in which educators function. School leaders should be enthusiastic to model the transformational components of charisma (idealized influence),

inspirational motivation, intellectual stimulation and individualized consideration in order to implement ICT effectively in their schools. According to Bass and Riggio (2006), transformational leadership can be taught. Therefore, decision makers should provide professional development for principals to learn the skills and knowledge they need to use technology tools and also to learn the components of transformational leadership to implement and integrate technology into their schools effectively.

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