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School Principals' Technology Leadership Competency and Technology Coordinatorship

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Abstract

The aim of this study is to determine the primary and high school principals' competency in technology leadership and so to define implications for advanced competency. The population of the study was formed by 134 school principals in Maltepe and Kadikoy districts in Istanbul. On account of the fact that population was reachable, no specific sampling method was used for the present study. The research survey named NETS-A the Principal Technology Leadership Assessment (PTLA) was adapted into Turkish as a result of Confirmatory Factor Analysis (CFA) indicating goodness of fit indices in 3 dimension (CMIN/df=1.547/CFI= .913/RMSA= .082) and Exploratory Factor Analysis (EFA) which revealed 3 factors explaining % 64 of total variance. Internal consistency reliability of the survey was determined with Cronbach's alpha coefficient (α= .95). According to the results of the current study, school principals were adequate for technology leadership at a "significant" level (M = .85, SD = .54), while their competency in "leadership & vision" dimension of technology leadership has the lowest value (M = .78, SD = .68) compared to other dimensions. Additionally, it was found that female school principals are more adequate for "leadership & vision" dimension than their male colleagues (p< .05). Besides, it was determined that schools owning information technologies coordinator teacher are more adequate for "learning & teaching" dimension of technology leadership (p < .05).

Key Words

Technology Leadership, Technology Planning, Technology Coordinatorship, Technology Leadership Competency, IT Coordinator Teacher.

Technology management should not only be considered narrowly in terms of technology supply but also in terms of a more integrated perspective with whole management process (Balcı, 2001). When defining technology as the mental and physical facilities by which an organization transforms its inputs into outputs, customarily the schools operate the technology in educational and instructional activities (Ataman, 2002). While efficiently operating educational technologies in these activities, it is essential for school principal to keep abreast of the current developments in school management so as to be in line with them and therefore to enhance school personnel's technical knowledge and skills (Başaran, 2000).

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Technology leadership roles in schools touch many responsibilities ranging from ensuring the appropriateness of lighting facilities in classrooms to the assurance of healthy computer usage (Micheal, 1998, p. 280) and also ranging from using technology in ways that support democratic principles and protecting the equal access to technology to preventing gender inequality in technology usage (Flanagan & Jacobsen, 2003, p. 135).

All these educational technology leadership roles and responsibilities should be evaluated through scientifically well-defined dimensions whereby educational research organizations and researchers developed standards and models on this field. For this reason, the International Society for Technology in Education (ISTE) developed technology leadership standards named as the National Educational Technology Standards for Administrators (NETS-A), which are (Anderson & Dexter, 2005; International Society for Technology in Education [ISTE], 2002):

1. Leadership and Vision
2. Learning and Teaching
3. Productivity and Professional Practice
4. Support, Management, and Operations
5. Assessment and Evaluation
6. Social, Legal and Ethical Issues

In 2009, these standards were updated by the ISTE as visionary leadership, digital-age learning culture, excellence in professional practice, systemic improvement, digital citizenship (ISTE, 2009). According to Sujo-Montes and Gallagher (2010), the ISTE standards are compatible with new times calling for new attitudes for school principals that focus on proficiency in using technology and school vision that places technology as an essential part of the curriculum.

It is generally assumed that macro indicators like generating financial resources and the allocation of technological equipment for school are the first coming to mind as topics explicitly related to technology leadership. Accordingly, school principals regard technology supply as one of their fiscal responsibilities; moreover, they express inadequate allocation of technology resources among their school's physical impossibility (Turan, Taş, Aydoğdu, & Oyman, 2010). Undoubtedly, it should be taken into account of a school's financial possibility and technological opportunity when developing a technology plan or professional practice for the school and its staff (Schmitt, 2002, p.18), but also it should be kept in mind that leadership behaviors set forth in a planning process is just as significant as the plan in question (Akbaba-Altun, 2002).

The NETS-A standards draw attention with the consistency of its main dimensions to other technology leadership models along with the function pioneering different scholarly approaches (Akbaba-Altun, 2002). Knuth and Hopey (1996) had developed a technology planning model which focuses on creating technology vision and instructional goals in a fashion similar to the NETS-A standards. Likewise, Parks, Sun and Collins (2002) underlined the principals' technology leadership qualifications such as: a technology vision, promotion of staff development, encouraging instructional integration, infrastructure for technology, and using technology. According to Sun (2000, p. 7), supportive leadership and strong vision have a great influence on successive technology leadership understanding that can be formulated as "Leadership + that First Success = Vision Accomplished." Therefore, principals should urge teacher participation in technology planning process in order to reveal their leadership potentials so that technology leadership would extend to all school (Clark & Denton, 1998).

Saban (2007) addressed that school principals as technology leaders are required to have a long-term vision and commitment to coordinating and allocating required resources for the school. Alkan (1996) stated that the improvement in education technologies brings changes that are more far-reaching to coordinating school and teacher tasks together with curriculum designing. As a necessary corollary to this, integrated management and technical skills gain increasing importance for the contemporary managers (Sarıhan, 1998). Gümüşeli (2002) expressed that those professional development activities for principals should embrace some issues regarding education technologies and curriculum development.

Lesisko (2005) asserted that technology coordinators figure indispensable function by assisting principals regarding their technology leadership roles. With their functions of being instructional designers and technology experts, they support school principals in a wide range of leadership activities (Carter, 2000). Depending upon the school's strategic objectives, district, and possibilities, IT coordinators can perform many tasks such as professional network specialist or responsible technology expertise repairing school computers and other electronic devices (Palace & Lesisko, 2005). Levinson and Suratt (1999) stressed that IT coordinators' expanded responsibility should be properly balanced with their authority and organizational powers in school. Even though IT coordinators were nominated sort of technical assistant principals by the Ministry of National Education (MNE) (Akbaba-Altun, 2004), their assignment is inevitably to be determined by schools' technologic possibilities under local circumstances. As Dexter (2008) said, we cannot expect the same coordinatorship service from a teacher staffed in a "lap-top school" and disadvantaged school. However the MNE described IT coordinator teachers' tasks and some of them are presented below (Milli Eğitim Bakanlığı [MEB], 1993):

1. To ensure efficient execution of computer training and computer-aided education in school;
2. To keep the computer labs open for student and teacher use during working hours, when necessary, outside working hours as well.

3. To hold a seminar about computer-aided education with teachers once a month.

Later on, the MNE described IT coordinators as "change leaders" in an official regulation (Milli Eğitim Bakanlığı [MEB], 2001). Sugar and Holloman (2009) identified IT coordinators' four main areas of responsibility such as: instructional activities, technical expertise, planning-measurement, and leadership. It is controversial to determine whether all these are merely subject to IT coordinators or the association of principals and IT coordinators (Akbaba-Altun, 2004; Anderson & Dexter, 2005; Schoeny, 2002).

From the point of view of task sharing, Saiti and Prokopiadou (2009) examined IT coordinatorship activities in their research that was conducted in 8 cities in Greece. Following the research, they claimed that technological proficient teachers provided technical support to schools in the ratio of % 67. On the other side, there was no permanent staff as IT coordinator in schools at all.

Lai and Pratt (2004)'s research indicated that IT coordinator and teacher contribution to the vision of the school's technology leadership differ from each other to the extent of what the principal revealed leadership behavior in the school. Yet, McGarr and Kearney (2009) showed that principals occasionally regarded themselves as technology coordinators by appealing part-time technology support. In some cases, they assigned full-time technology coordinators when they felt themselves insufficient in technology matters. Thus, Davies (2010) claimed that principals are really confused whether IT coordinatorship functions as a privileged and professional assignment or its responsibility should be shared with all school shareholders in due course.

The purpose of this research is to examine the primary and high school principals' technology leadership competency. More specifically, the following research questions have shaped this study:

1. What is school principals' technology leadership competency in terms of three sub-dimensions, named "leadership & vision", "learning & teaching", "assessment & evaluation", and one general factor named "technology leadership competency"?
2. Is there any difference among school principals in terms of principal's demographic characteristics, school grade and presence of regular IT coordinator in the school?

Method

Survey model was used in this study, which is an approach aiming to describe the case as it is which was occurred in the past or is still prevailing (Karasar, 2006).

Sample

The population of study was formed by 134 school principals in Maltepe and Kadikoy districts in Istanbul. On account of accessible population, no specific sampling method was used for the present study. After the surveys including missing data and mistakes were eliminated, 83 principals' surveys were taken into account so survey return rate was found to be approximately 62%. Most of the principals were males (86,7%), aged 45-60 years old (68,7%). 44% of the schools had an regular IT coordinator teacher.

Measures

The Principals Technology Leadership Assessment (PTLA) was developed by the American Institutes for Research and UCEA Center for the Advanced Study of Technology Leadership in Education (CASTLE) to measure school principals' technology leadership qualities (Castle, 2009). The PTLA was translated and adapted into Turkish with reliability and validity analysis by courtesy of Scott McLeod, who is director of the CASTLE. The Turkish survey was centered on a midline of zero and range from +2 to -2 in line with original survey.

Procedures

Because this survey's cultural background set forth a peculiar model for technology leadership, its construct validity was measured confirmatory factor analysis (CFA) in pursuit of explanatory factor analysis (EFA) explaining the survey's general factor loads. As a result of these analyses, it is determined that the collected data indicated a goodness of fit with values in 3 dimensions, leadership & vision, learning & teaching, assessment & evaluation (CMIN/df=1.547, CFI=0.913, RMSA=0.082).

According to Schumacker and Lomax (2004) and Gillaspy (1996) and Ullman (2001), CMIN/df ratio indicating 2 and below values can be accepted as a perfect fitness level for CFA. As for CFI, 0.90 and above values are considered as a sign of good model-data fitness (Albright & Park, 2009). Sümer (2000) asserted that RMSA value approaching 0.08

would be accepted as acceptable fitness in CFA. Therefore, the Turkish version of the PTLA presented a good fitness in terms of construct validity.

The survey's factor loadings were examined with EFA and the result showed that factor loadings ranged from 0.57 to 0.79 and 3 factors explained ideally 64% of the total variance. According to Büyüköztürk (2007), before rotation process in EFA, high explained total variance indicates that the survey has one general factor. Thus, it was revealed that the survey measures entirely school principals' technology leadership competency as well. Besides, Internal consistency reliability of survey was validated with Cronbach's alpha coefficient (α=0,95).

Results

The technology leader in a school is the person who mobilizes all school components by using technological devices (Can, 2003). According to the current study results, school principals have performed "significantly" in technology leadership proficiency. In compatible with this, Akbaba-Altun (2008) and Çelikten (2002) stressed that school principals have positive perception of using computers and other educational technologies in education. On the other hand, Erden and Erden (2007) asserted that school teachers perceive school principals as minimally proficient in technology issues. Seferoğlu (2009) discussed this situation that school principals' unawareness of technology leads them to great and unrealistic expectations from teachers so that teachers perceive principal attitudes in negative ways. However, Can (2003)'s research showed that school principals keep on thinking themselves adequate regarding technology leadership in parallel with this study.

In order to address these issues and to deepen the study outcomes, sub-dimension results are conducive to display their real competency. Leadership and vision dimension, not as such, brought out that principals have the lowest competency with 0.78 mean in this dimension. It is impossible to talk about a real technology leadership regardless of creative and shared vision as well as technology planning skills. Thus long-term school technology plan based upon shared school vision with education stakeholders is due to principals to research school needs though principals meet partly feasible and strong technology planning praxis (Sibley & Kimball, 2004; Sincar, 2009). Without taking first step by means of effective technology planning, it is futile to proceed in leadership development (McNabb, Valdez, Nowakowski, & Hawkes, 1999). In a similar way, Saban (2006) addressed that technology planning does not mean only allocating a fund for technology development from school budget, but also it covers to focus on explicitly technology oriented education understanding.

Another meaningful finding suggested that female principals performed more effective technology leadership especially in the leadership and vision dimension. Although gender differences in management skills preserved its controversial comments together, this study scored notably another result on behalf of the female principals. Colwill and Townsend (1999) suggested they success in building up common values and integrating innovations into school activities compared to male principals. Also other research on learning schools revealed that females are more successful regarding shared vision (Banoğlu, 2009; Uysal, 2005). Moreover, they are open to collaboration in learning process unlike their male colleagues (Kümüş, 1998). On the other side, Saiti and Prokopiadou (2009, p. 310) claimed that male principals are more conscious of technology integration than female principals. In the light of these studies, the current results were evaluated that female principals have strong communication skills and it is useful to develop collaboration with other local education organizations and insight for shared technology vision in school broad (Odabaşı, 2007).

As for IT coordinatorship challenge, the current results pointed out that the coordinator teachers purposely do their duty with regard to pioneering school environment in the learning and teaching dimension. This is evidently consistent with other research reports of Lesisko (2005), Louie and Hargrave (2006) and Wright and Lesisko (2007). With their function to focus on instructional goals, it can be interpreted that they play a leading role in principals' instructional leadership proficiency (Wagner, 2004). Whereas IT coordinators prevent technical oversight and problems to hinder instructional goals, principals can allocate time to develop technology-aided education in a broad way (Woods, 2000). They influence on not only construct side of schools with their technical support but also they contribute to turn school characteristic into open climate features by encouraging technological innovations (Tondeur, Valcke, & Braak, 2008).

To sum up, the current study showed that IT coordinator teachers are skillful to increase school principals' technology leadership in learning and teaching activities. As Fraizer and Bailey (2004, p. 2) noted that effective technology coordinators "need to be comfortable wearing many hats" and so they do.

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