The Relationship between Technology Leadership Roles and Profiles of School Principals and Technology Integration in Primary School Classrooms[1]

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ABSTRACT

The purpose of this study was to investigate the relationship between technology leadership behaviors of school principals and teachers' level of technology integration, and to determine technology leadership profiles based on teacher views and examine their association with technology integration. The researchers administered two questionnaires to 352 teachers working at sixteen primary schools in a large city in southeastern Turkey. The results revealed a positive, but weak relationship between technology leadership and technology integration. Furthermore, it was concluded that there were positive but weak relationships among technology integration and human centeredness, communication and collaboration, vision and support sub-dimensions of technology leadership. Two technology leadership profiles (high-TLP=65.6% and low-TLP=34.4%) were constructed as a result of cluster analysis. A statistically significant difference was detected between teachers' technology integration perceptions which were categorized into two profiles. The paper concludes by suggestions for implications to strengthen the link between technology leadership and technology integration.

Key Words: School principals, Technology leadership roles, Technology leadership profiles, Technology integration, Teacher perceptions

INTRODUCTION

Schools today are increasingly turning into technology-rich institutions, which both supports reform initiatives in education (Means, Roschelle, Penuel, Sabelli, & Haertel, 2004; Gulbahar & Guven, 2008) and contributes to the process which aims at providing students with competencies they need in the information age (UNESCO, 2002; Kozma & Wagner, 2006). Research conducted in the field of ICT in education suggests that technology-rich learning environments make significant contributions to reach educational goals (Sandholtz, Ringstaff, & Dwyer, 1997; Schacter, 1999; OECD, 2005; Smeets, 2005). In the review of research on the impact of ICT on learning by Eng (2005), it was concluded that ICT contributes to the learning in schools in a positive way. Policymakers and authorities in the field of education are well aware of this fact and try to promote using ICT more in education (UNESCO, 2003), thereby allocating a significant amount of financial resources to this issue (Kozma, 2005).

Using ICT in education successfully requires fundamental and systematic change in schools (Flanagan & Jacobsen, 2003). Although there are many variables in successful integration of technology in schools such as sufficient resourcing, new instructional programs and teachers' understanding, skills, and orientations (Leonard & Leonard, 2006; Afshari, Bakar, Luan, Samah, & Fooi, 2009), school principals' support for and understanding of integration of technology into schools plays a significant role (Berret, Murphy & Sullivan, 2012). Byrom and Bingham (2001, 4) argued that "leadership is probably the single most important factor affecting the successful integration of technology into schools".

School principals and their behaviors are one of the important factors in the process of integrating new technologies into education successfully and of teachers' using information technologies in their courses effectively (Baylor & Ritchie, 2002; Flanagan & Jacobsen, 2003; Hayes, 2007; Redish & Chan, 2007). It has been proposed that school principals must effectively lead this process and direct ICT use in their schools (Kearsley & Lynch, 1992; Brooks-Young, 2002; Flanangan & Jacobsen, 2003; Anderson & Dexter, 2005). In this context, school principals as technology leaders are expected to lead and encourage the school, teachers and students in terms of using information and communication technologies, train them, use technology effectively in school administration and put forward an effective technology integration process (Turan, 2002).

Technology Integration

Related literature indicates that ICT should be integrated or embedded into the learning experience of pupils in order to take advantage of technologies and motivate and engage pupils in learning more effectively (Otto & Albion, 2004; Voogt & Knezek, 2008). The term technology integration in education has been defined by many researchers (Bebell, Russell, & O'Dwyer, 2004; Kocak-Usluel, Kuşkaya-Mumcu, & Demiraslan, 2007). According to Kocak-Usluel et al. (2007), technology integration is related to curriculum delivery. Therefore, they define this term as using technology to achieve learning goals and to facilitate pupils' learning throughout the instructional program. Some other researchers (for example, Bebell et al., 2004) define it in terms of teachers' ways of using computers in the classrooms and propose that this term means using technology to perform instructional activities more reliably and effectively. Apart from these, Inan and Lowther (2010) revealed that teachers' readiness, teachers' beliefs, and computer availability indicated a significant

positive direct effect on technology integration. According to Akcaoglu, Gumus, Bellibas and Boyer (2014), some issues such as preparing administrators, changing curriculum, addressing local contexts, trying new teaching methods and giving teachers access to sustained opportunities for professional growth must be considered for effective use of technology. If technology is effectively integrated in the school, it can help students to employ their academic skills to solve real-world problems. However, failure of integration and using technological school environments do not ensure that students are provided with all the necessary skills for success in today's world (Sandholtz, Ringstaff, & Dwyer, 1997; Eisenberg & Johnson, 2002).

The School Principal as a Technology Leader

Technology leadership is a collection of organizational decisions, policies and activities which facilitate effective use of ICT in education (Anderson & Dexter, 2005). School principals as technology leaders are expected to generate strategies about how to use modern technologies in order to meet the needs of constantly changing educational settings. To meet these expectations, educational administrators create visions, provide training for the staff, determine priorities, share resources among the staff and ensure organizational order. Setting up a technology-based measurement and assessment system, following a thorough election process to meet specific needs of the education process and seeking help from the specialists both in and out of the field of education can be listed as examples of technology leadership activities. Additionally, the technology leader is expected to have the standards that can provide a model for effective use of technology in education for all stakeholders in education. In this regard, the research carried out in the US and Canada, in particular, can be regarded as leading studies in terms of specifying technology leadership standards for school principals and updating these standards in parallel with the novelties in the information technologies steadily (Yee, 2000; Redish & Chan, 2007). However, according to Richardson, Bathon, Flora, and Lewis (2012), more research is needed on technology leadership standards for school principals.

In the framework developed for the technology leadership roles of school principals, the International Society for Technology in Education (ISTE) emphasizes that school principals should exhibit visionary leadership roles, lead the construction of a culture of digital learning, provide opportunities for professional growth in concert with the digital age, support continuous improvement and set an example in terms of adopting a digital culture (ISTE, 2009). In order to achieve roles, school principals need to be knowledgeable and highly skilled in many areas (McLeod & Richardson, 2013). Bektas (2014) argues that school principals need to have cognitive, psychomotor and sensory technological qualifications. In their metaphorical study, Hacifazlioglu, Karadeniz, and Dalgic (2011) found that behavioral dimensions of technology leadership are intertwined with visionary leadership, transformational leadership, systematic development, learning culture and reflective learning practices.

Besides these roles, some researchers summarize the roles that the school principals should display as technology leaders as follows (Matthews, 2002; Chang, Chin, & Hsu, 2008; Grady, 2011):

The school principal should:

- Develop a vision to display how to use technology in the school.

- Set up a technology committee in the school.
- Organize personnel development and training programs in accordance with the needs of the staff.
- Facilitate access to the required infrastructure and resources.
- Be a model of technology use and support using technology.
- Communicate with the staff and other stakeholders and stress the importance of technology use in terms of student achievement.
- Set up standards for effective and efficient technology use.

Additionally, in an empirical study, Sincar and Aslan (2011) investigated teachers' perceptions of technology leadership roles of school principals in Turkey. They identified four technology leadership dimensions which are human centeredness, vision, communication and collaboration, and support. The human centeredness dimension has been defined as devoting attention to the needs of the school stakeholders such as administrators, teachers and students, and adopting a management approach which takes the human to its hub in the decisions to be made. In the vision dimension, which is inspired by school principals' sharing a vision for effective technology use both in administration and in education, it is suggested that the school principal must develop an environment and a culture enabling achievement of this vision. The communication and collaboration dimension means that the school principal should develop a communication strategy and culture which is technology-based and embraces all of the members of the school to make communication more efficient. Lastly, in the support dimension, the school principals are supposed to set an example for effective use of technology and strive to provide instructional methods and technologies which can help ensure learning at the highest level (Sincar, 2009).

Related Research

Various studies have been conducted to investigate the relationship between school principals' leadership roles/styles and use of technology at schools. In research by Hughes and Zachariah (2001), it was pointed out that facilitative leadership roles exhibited by the school principals influence the spread and usage of technology within the organization. Similarly, Dooley (1998) also concluded that in schools where change-initiative leadership was exhibited, the spread and use of technology was different from that of other schools. Zhao, Pugh, Sheldon, and Byers (2002) maintained that a supportive-administrative school environment is pivotal for successful integration of ICT in schools. On the other hand, Abdul Razzak (2013) found in her study that school principals supported teachers in various ways in terms of technology integration. She asserted that the type of support is good, but if there is not "a solid understanding of the accurate definition of technology integration and its components, support provided for teachers may not be effective and lack the direction it should take" (p. 9). Even though school principals have an important role in technology integration, Shattuck (2010) argues that the alignment between the principal's vision for technology integration and the teachers' vision of technology integration is the key to the technology integration process.

A literature review yielded few studies investigating the effects of technology leadership on teachers' technology use. For example, Rogers (2000) examined the relationship between teachers' perceptions of technology leadership and their use of

technology in the classroom. The results revealed that the teachers who stated that their school principals exhibited a supportive role in terms of technology use in the classroom were more likely to integrate technology into their courses. In the study by Cox (1997), it was suggested that technology leadership roles of school principals might have a major influence on teachers' use of ICT in their classrooms. Consistently, Anderson and Dexter (2005) concluded in their comprehensive study investigating the factors affecting technology use in schools that technology leadership was the most significant feature of technology use and technology integration at the schools.

Significance of the Study

Even though the number of the studies emphasizing the importance of technology leadership has increased over time (Byrom & Bingham, 2001; Schiller, 2003b; Afshari, Bakar, Luan, Samah, & Fooi, 2008; Chang, Chin, & Hsu, 2008; Tondeur, Cooper, & Newhouse, 2010), it is proposed that the studies examining technology leadership roles of school principals empirically remain few in number (Yee, 2000; Mehlinger & Powers, 2002; Schiller, 2002; Macaulay, 2009; Tan, 2010).

The literature about technology leadership centers on teachers and their activities within the classroom (O'Dwyer, Russell, & Bebell, 2004), and mostly school principals' role in this process is overlooked (Afshari et al., 2008). However, the decisions regarding technology influencing the classroom are made outside of the classroom. It is, therefore, of utmost importance to investigate the policies about technology at the school level (Hew & Brush, 2007). In their study on technology integration barriers, Wachira and Keengwe (2011) found that one of the barriers was the school principals' lack of technology leadership. Therefore, a strong relationship must be established between technology leadership and technology integration in order to make the expected improvements (Thomas, 1999). Overall, it is indisputable that the studies exploring the relationships between technology leadership roles of school principals and technology integration at schools and in the classrooms are needed (Kuzu, 2007; Macaulay, 2009; Tan, 2010; Wilmore & Betz, 2000).

In this context, the aim of this study is to investigate the relationship between school principals' technology leadership roles and teachers' technology integration levels in the classroom, and then to determine technology leadership profiles based on teachers' views and examine their association with technology integration.

METHOD

Research design

This study is correlational research. Correlational research aims at assessing the degree and direction of a relationship (or association) between two or more variables using the statistical procedures of correlational analysis (Plano-Clark & Creswell, 2015; Schreiber & Asner-Self, 2011). These studies help clarify our understanding of important phenomena by identifying relationships among variables (Fraenkel, Wallen, & Hyun, 2012).

Participants

This research was conducted at sixteen primary schools with the participation of 352 teachers chosen via cluster sampling technique in the academic year of 2012-2013 in a large city in southeastern Turkey. Demographic information regarding the participants is presented in Table 1.

Table 1. *The characteristics of participants*

Demographics	Frequency	Percentage (%)
Gender		
Female	187	53.1
Male	165	46.9
Total	**352**	**100.0**
Branch		
Classroom teacher	193	54.8
Branch teacher	159	45.2
Total	**352**	**100.0**
Seniority		
1-5 years	69	19.6
6-10 years	94	26.7
11-15 years	97	27.6
16-20 years	53	15.1
21 years and above	39	11.1
Total	**352**	**100.0**

Data Collection Instruments

Two different data collection instruments were used in this study. The "Technology Leadership Roles of the Elementary School Administrators Scale", as developed by Sincar (2010), was used to determine teachers' perceptions of technology leadership roles of school principals. This scale consists of 29 items and four sub-dimensions which are human-centeredness, vision, communication and collaboration, and support. The scale explained 68.73% of total variance. As a result of reliability study of the scale, the calculated Cronbach's Alpha coefficient was found to be .96. This coefficient indicates that the scale is highly reliable (Cohen, Manion, & Morrison, 2007).

The "Classroom Use of Computers Scale", which was developed by van Braak, Tondeur, and Valcke in 2004, was used to determine teachers' technology integration level. This scale includes eight items. Exploratory factor analysis was conducted to examine validity of the scale for this study. The exploratory factor analysis indicated that KMO sampling adequacy coefficient was 0.826, and the result of Bartlett's Test of Sphericity was 789.901 (p<0.00). The scale explained 44.81% of the variance. The Cronbach's Alpha internal consistency coefficient was found to be .82. The coefficient demonstrates that the reliability of the scale is high (Cohen, Manion, & Morrison, 2007, 147).

Data Analysis

The data collected for this research was firstly analyzed using the Kolmogorov-Smirnov test to determine whether the data distributed normally, and then a correlation analysis was performed. As a result of the analyses, it was found that the data did not distribute normally. Thus, nonparametric Spearman's Rank correlation was preferred (Landau & Everitt, 2004; Coakers, 2005). Data were analyzed in two ways in order to determine technology leadership profiles and their relationship with technology integration. First, a cluster analysis was conducted to categorize teachers into clusters based on their perceptions of technology leadership. To construct clusters, two-step cluster analysis was performed. Then it was tested whether there was significant difference between teachers' perceptions in terms of technology integration. Independent sample t-test was used for testing the difference. All of the analyses were conducted using the SPSS 16.0 package statistical software program. Missing data were excluded using the pairwise deletion option.

FINDINGS

In this section, the results of the statistical analyses are presented. In this regard, a correlation analysis was performed to determine whether or not there was a relationship between technology integration and technology leadership and its sub-dimensions. To this aim, the Kolmogorov-Smirnov test for normality was performed. Table 2 demonstrates the results of the Kolmogorov-Smirnov test (KST).

Table 2. *The Kolmogorov-Smirnov normal distribution test*

Variables	N	Kolmogorov-Smirnov Z	Asymptotic Sign. (2-tailed)
Technology Integration	352	3.609	0.000
Human-centeredness	352	3.999	0.000
Vision	352	2.865	0.000
Support	352	3.831	0.000
Collaboration	352	4.692	0.000
Technology Leadership	352	2.235	0.000

As can be seen in Table 2, the data did not distribute normally (asymptotic sig. $p<.0$). Therefore, the non-parametric Spearman's rank correlation method was used for the correlation analysis (Landau & Everitt, 2004; Coakers, 2005). Table 3 shows the results of Spearman's rank correlation.

Table 3. *Spearman's rank correlation (Technology leadership–technology integration)*

	Vision	Collaboration	Support	Technology Leadership (Total)	Technology Integration
Human- centeredness	.765(**)	.647(**)	.698(**)	.868(**)	.239(**)
Vision		.695(**)	.770(**)	.908(**)	.203(**)
Collaboration			.676(**)	.863(**)	.143(**)
Support				.889(**)	.193(**)
Technology Leadership (Total)					.191(**)

** All correlations are significant at the 0.01 level (2-tailed).

The results of the Spearman's analysis revealed a positive but weak correlation (Cohen, 1988) between technology integration and technology leadership. Given the sub-dimensions, a positive but weak correlation was observed between technology integration and the human-centeredness dimension (rho=.239; p<.01). A positive but weak correlation was detected between technology integration and the communication and collaboration dimension (rho=.143; p<.01). A positive but weak correlation emerged between technology integration and the vision dimension (rho=.203; p<.01), and finally a positive but weak correlation was detected between technology integration and the support dimension (rho=.193; p<.01).

The researchers conducted a two-step cluster analysis to determine "School principals' technology leadership profiles", according to teacher perceptions. The profiles and frequencies obtained as a result of the cluster analysis are presented in Table 4.

Table 4. *Profiles of the clusters and frequencies*

Cluster	Human centeredness	Communication & Collaboration	Support	Vision	%
1 (H-TLP)	3.769	3.590	3.954	3.822	65.60
2 (L-TLP)	2.504	2.168	2.680	2.480	34.40

Two profiles were specified as a result of the cluster analysis. The profiles of those in the second cluster are lower in all dimensions of technology leadership than those of the first cluster. Given these profiles, the first cluster was labeled as *High Technology Leadership Profile (H-TLP)*, and the second cluster was named as *Low Technology Leadership Profile (L-TLP)*. Frequencies of the profiles indicated that majority of teachers (65.6%) believed that their school principals had a high technology leadership profile. The rest of the teachers (34.4%) opined that their principals had a low technology leadership profile. Figure 1 demonstrates technology leadership profiles according to teachers' perceptions.
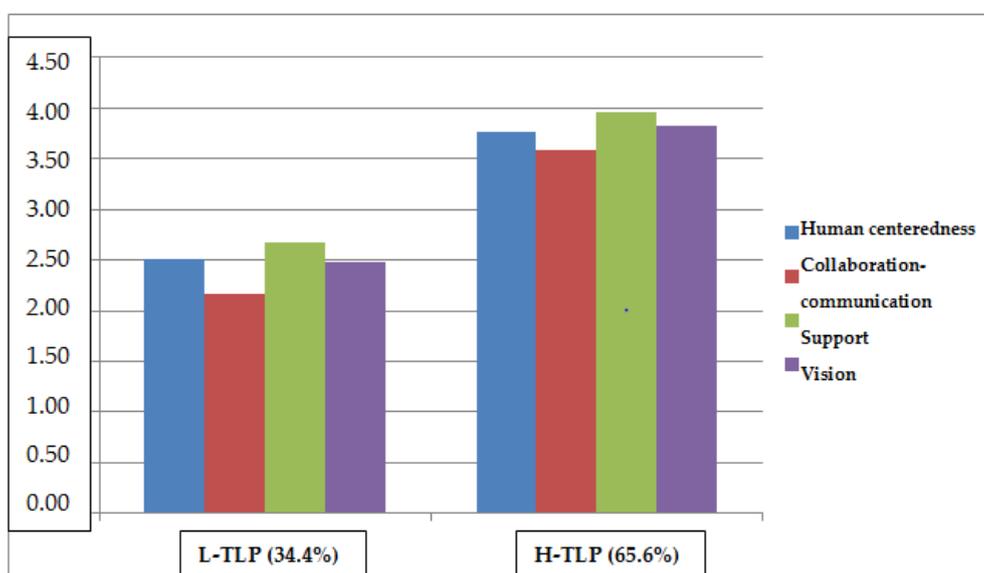

Figure 1. *Clusters of technology leadership profiles*

When the profiles are examined, it can be seen that the school principals who were in the Low-TLP did not have strong interpersonal relationships (human centeredness) (M=2.5040; sd=0.63495) and were not willing to collaborate with teachers (M=2.1682; sd=0.63050). Furthermore, they were lacking a vision pertaining to technology use (M=2.4802; sd=0.62058) and did not support teachers strongly in terms of technology use (M=2.6800; sd=0.70252). However, according to teachers' perceptions, the school principals who had a High-TLP were more successful in human relations (M=3.7686; sd=0.49854), compared to those in the first cluster, and were more open to communicate and collaborate with teachers (M=3.5902; sd=.66331). Additionally, these principals had stronger visions regarding technology use (M=3.8225; sd=0.53142) and supported teachers more for technology use (M=3.9540; sd=0.55446).

The second problem of the research was to test whether or not there was a significant difference between school principals perceived technology leadership profiles and technology integration. Independent samples t-test was used to conduct this analysis. T-values and significance are presented in Table 5.

Table 5. *T values and significance level*

	Profile	n	Mean	S	df	t	p	Mean Difference	Std. Error Difference
Technology integration	H-TLP	200	3.935	0.596	303	2.776	0.005	0.211	0.076
	L-TLP	105	3.724	0.695					

When Table 5 is examined, it can be detected that there was a significant difference (t=2.776; p<0.05) between teachers' technology integration perceptions categorized in two profiles. Teachers who were in the H-TLP cluster used technology more commonly compared to those in the L-TLP at statistically significant level (Mean difference= 0.211). These findings demonstrate that teachers in the H-TLP integrated technology more when compared to those in the L-TLP.

DISCUSSION AND CONCLUSIONS

As a main result of the research, a weak but positive correlation was found between technology leadership roles of school administrators and teachers' technology use in their courses. According to Yu and Durrington (2006), school principals play a major role in determining whether educational technologies will be used effectively. Chang et al. (2008) underscores that there is a strong relationship between technology leadership roles of school principals and teachers' integrating educational technologies into their courses, and argues that technology leadership is a requirement for effective use of technology in schools. Unlike the findings of the current study, Anderson and Dexter (2005) found in their study that technology leadership was a strong predictor of technology use and technology integration in schools. Similarly, in the literature, some studies have revealed that there is a positive relationship between technology leadership roles of school principals and technology integration at schools (Cox, 1997; Rogers, 2000; Hughes & Zachariah, 2001; Zhao et al., 2002; Leng, 2008). One reason behind the weak correlation between technology leadership and technology integration in this study may be that school principals do not display strong technology leadership behaviors in terms of technology integration.

Another finding of this research is that the human centeredness sub-dimension of technology leadership and technology integration was positively correlated, but at a low level. Like all other social systems, schools are made up of people. Therefore, the school principal must not disregard the individuals and their needs in the social system (Hoy & Miskel, 2008). She/he must admit that the schools are made up of individuals and manage their schools in accordance with this notion (Bursalıoğlu, 2002). In this respect, school principals must make decisions by paying attention to the students and teachers' needs in the process of adopting educational technologies at schools (Sincar, 2009).

One of the research results is that there was a weak and positive relationship between the vision sub-dimension of technology leadership and technology integration. Yee (2000) argues that school principals are supposed to generate a shared vision regarding comprehensive technology integration and a school culture congruent with this vision. Tearle (2003) proposes that a vision regarding ICT usage is needed in the process of technology integration at schools. According to Grady (2011), it is the school principal who carries the flag of vision in the process of technology integration. For this reason, school principals must develop a vision and objectives about technology at the school.

One of the findings of this study is that there was a positive but weak correlation between the support sub-dimension of technology leadership and technology integration. Previous studies in the literature demonstrate that teachers need great support from their colleagues and school principals, particularly in the process of integrating technology into their courses and the curriculum (Williams, Coles, Wilson, Richardson, & Tuson, 2000; Zhao et al., 2002). In this process, teachers who think that school principals will support them tend to have more positive attitudes towards technology integration (Kincaid & Feldner, 2002; Rogers, 2000). Grady (2011) notes that it is a challenging but important task for school principals to support and encourage the teachers in integration process. Schiller (2003a) also maintains that if technology is to be integrated in the classroom, teachers must be supported constantly in this process. Additionally, Jones (2009) proposes that there is a lack of technology leadership and support in general in the schools which fail in technology integration.

The last finding of this study demonstrated that there was also a weak but positive correlation between technology integration and the communication and collaboration sub-dimension of technology leadership. Accordingly, previous studies suggest that school principals must communicate and collaborate with teachers in the process of technology integration (Schiller, 2003a; Cakir, 2012). One of the important tasks of the technology leaders is to ensure a strong collaboration in the school (Anderson & Dexter, 2005).

On the basis of the findings of this research, it was concluded that there was a weak but positive relationship between technology leadership, its sub-dimensions and technology integration. These findings are inconsistent with previous research which has suggested technology leadership is a strong predictor of ICT implementation and technology integration. Another reason may be that technology may not be truly integrated into teaching and learning, or, as mentioned by Lei and Zhao (2007), the quality of technology use is not at a desired level at these schools.

The cluster analysis revealed two technology leadership profiles based on teachers' perceptions: High Technology Leadership Profile (H-TLP) and Low Technology Leadership Profile (L-TLP). According to the clusters, 65.6% of the teachers thought that their school principals had a high technology leadership profile, while 34.4% of the teachers believed that their principals had a low technology leadership profile. There was a significant difference between teachers' technology integration perceptions categorized in two profiles. It could be concluded that the school principals who were in the Low-TLP did not have strong interpersonal relationships and were not willing to collaborate with teachers. These principals did not have a clear vision regarding technology use in schools and did not support teachers strongly in terms of technology use. However, the school principals who had a High-TLP were more successful in human relations, compared to those in the first cluster, and were more open to collaborate with teachers. Finally, these principals had stronger visions regarding technology use and supported teachers more for technology use.

EDUCATIONAL IMPLICATIONS

One of the main determinants of effective use of technology in education is school principals' and teachers' acquisition of the skills and knowledge needed for technology integration in education. Providing effective professional development programs can make a difference for school principals and teachers in terms of acquiring the required skills and

knowledge about technology integration in schools. Knowing that technology makes contributions to student learning and raising awareness toward the effective use of technology can facilitate technology integration process in schools. In this process, school principals need to lead and encourage school staff to integrate technology into their courses. This is highly important for Turkey given that the FATIH project, considered to be one of the most significant educational investments for technology integration, has been launched in schools nationwide. The success of this project is closely related with school principals' and teachers' awareness and understanding of the role of technology for student learning. School principals' efforts, teamwork and assessment systems regarding technology integration can help raise awareness and develop understanding about the significance of this project.

REFERENCES

Abdul Razzak, N. (2013). Challenges facing school leadership in promoting ICT integration in instruction in the public schools of Bahrain. *Educ Inf Technol*, doi: 10.1007/s10639-013-9283-7.

Afshari, M., Bakar, K. A., Luan, W. S., Samah, B. A., & Fooi, F. S. (2008). School Leadership and Information Communication Technology. *The Turkish Online Journal of Educational Technology*, 7(4), 82-91.

Afshari, M., Bakar, K. A., Luan, W.S., Samah, B. A., & Fooi, F. S. (2009). Technology and school leadership. *Technology, Pedagogy and Education*, *18*(2), 235-248.

Akcaoglu, M., Gumus, S., Bellibas, M. S., & Boyer, D. M. (2014). Policy, practice, and reality: Exploring a nationwide technology implementation in Turkish schools. *Technology, Pedagogy and Education*, doi: 10.1080/1475939X.2014.899264.

Anderson, R. E., & Dexter, S. (2005). School technology leadership: An empirical investigation of prevalence and effect. *Educational Administration Quarterly*, *41*(1), 49-82.

Baylor, A. L., & Ritchie, D. (2002). What factors facilitate teacher skill, teacher morale, and perceived student learning in technology-using classrooms? *Computers & Education*, *39*(4), 395–414.

Bebell, D., Russell, M., & O'Dwyer, L. (2004). Measuring teachers' technology uses: Why multiple-measures are more revealing. *Journal of Research on Technology in Education*, *37*(1), 45-63.

Bektas, F. (2014). School principals' personal constructs regarding technology: An analysis based on decision-making grid technique. *Educational Sciences: Theory and Practice*, *14*(5), 1-9.

Berret, B., Murphy, J., & Sullivan, J. (2012). Administrator insights and reflections: Technology integration in schools. *The Qualitative Report*, 17(1), 200-221. Retrieved from http://www.nova.edu/ssss/QR/QR17-1/berrett.pdf.

Brooks-Young, S. (2002). *Making technology standards work for you: A guide for school administrators*. Eugene, OR: International Society for Technology in Education.

Bursalıoğlu, Z. (2002). *New structure and behavior in school administration* (*Okul yönetiminde yeni yapı ve davranış).* (13th ed.) Ankara: Pegem Akademi Publishing.

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.

Cakir, R. (2012). Technology integration and technology leadership in schools as learning organizations. *The Turkish Online Journal of Educational Technology*, *11*(4), 273-282.

Chang, I. H., Chin, J. M., & Hsu, C. M. (2008). Teachers' perceptions of the dimensions and implementation of technology leadership of principals in Taiwanese elementary schools. *Educational Technology & Society*, 11(4), 229–245.

Coakers, S. J. (2005). *SPSS version 12.0 for Windows analysis without Anguish*. Australia: John Wiles & Sons.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.): Hillsdale, NJ: Erlbaum.

Cohen, L., Manion, L., & Morrison, K. (2007). *Research methods in education*. (6th ed.). New York, NY: Routledge.

Cox, M. (1997). *Identification of the changes in attitude and pedagogical practices needed to enable teachers to use information technology in the school curriculum*. Paper presented at the Joint Working Conference on Information Technology: Supporting Change Through Teacher Education, Kiryat Anavim, Israel.

Dooley, K. (1998). Change facilitation and implementation: A model for school diffusion of computer technology and communications. *Planning & Changing*, 29, 173-186.

Eisenberg, M. B., & Johnson, D. (2002). *Learning and teaching information technology-computer skills in context*. ERIC Digest. ED465377

Eng, T. S. (2005). The impact of ICT on learning: A review of research. *International Education Journal*, 6(5), 635-650.

Flanagan, L., & Jacobsen, M. (2003). Technology leadership for the twenty-first century principal. *Journal of Educational Administration*, 41(2), 124-142.

Fraenkel, J., Wallen, N., & Hyun, H. (2012). *How to design and evaluate research in education*. (8th ed.), New York: McGraw-Hill.

Grady, M. L. (2011). *Leading the technology-powered school*. Thousand Oaks, CA: Corwin Press.

Gulbahar, Y., & Guven, I. (2008). A survey on ICT usage and the perceptions of social studies teachers in Turkey. *Educational Technology & Society*, 11(3), 37-51.

Hacifazlioglu, O., Karadeniz, S., & Dalgic, G. (2011). Okul yöneticilerinin teknoloji liderliğine ilişkin algıları: Metafor analizi örneği [School administrators' perceptions of technology leadership: An example for metaphor analysis]. *Eğitim Bilimleri Araştırmaları Dergisi - Journal of Educational Sciences Research*, 1(1), 97-121.

Hayes, D. N. A. (2007). ICT and learning: lessons from Australian classrooms. *Computers & Education, 49*(2), 385-395.

Hew, K. F., & Brush, T. (2007). Integrating technology into K-12 teaching and learning: current knowledge gaps and recommendations for future research. *Education Tech Research Dev*, 55, 223–252.

Hoy, W. K., & Miskel, C. G. (2008). *Educational administration: Theory, research and practice*, 8th edition. Boston: McGraw Hill.

Hughes, M., & Zachariah, S. (2001). An investigation into the relationship between effective administrative leadership styles and the use of technology. *International Electronic Journal for Leadership in Learning*, 5(5), 1-10.

Inan, F. A., & Lowther, D. L. (2010). Factors affecting technology integration in K-12 classrooms: a path model. *Education Tech Research Dev*, 58, 137-154.

ISTE. (2009). *National educational technology standards (NETS•A) and performance indicators for administrators*. Retrieved June 10, 2013 from www.iste.org.

Jones, A. (2009). *Role of distributed leadership in delivery of quality education: Examples from New Zealand research*. Paper presented at the 16th National Seminar on Educational Management and Leadership.

Kearsley, G., & Lynch, W. (1992). Educational leadership in the age of technology: The new skills. *Journal of Research on Computing in Education*, *25*(1), 50-60.

Kincaid, T., & Feldner, L. (2002). Leadership for technology integration: The role of principals and mentors. *Educational Technology & Society*, *5*(1). Retrieved August 11, 2012 from http://www.ifets.info/journals/5_1/kincaid.html.

Kocak-Usluel, Y., Kuşkaya-Mumcu, F., & Demiraslan, Y. (2007). ICT in the learning-teaching process: Teachers' views on the integration and obstacles. *Hacettepe University Journal of Education*, *32*, 164-178.

Kozma, R. B. (2005). National policies that connect ICT-based education reform to economic and social development. *Human Technology*, *1*(2), 117-156.

Kozma, R. B., & Wagner, D. (2006). *Reaching the most disadvantaged with ICT: What works. ICT and learning: Supporting out-of-school youth and adults*. Paris: OECD pp.97-120.

Kuzu, A. (2007). Perceptions of teachers regarding of key technology players in their institutions. *World Applied Sciences Journal*, *2*(S), 699-706.

Landau, S., & Everitt, B. S. (2004). *A handbook of statistical analyses using SPSS*. Boca Raton, Florida: Chapman & Hall/CRC A CRC Press Company.

Lei, J., & Zhao, Y. (2007). Technology uses and student achievement: A longitudinal study. *Computers & Education*, 49, 284-296.

Leng, N. W. (2008). Transformational leadership and the integration of information and communications into teaching. *The Asia-Pacific Education Researcher*, *17*(1), 1-14.

Leonard, L. J., & Leonard, P. E. (2006). Leadership for technology integration: Computing the reality. *The Alberta Journal of Educational Research*, *52*(4), 212-224.

Macaulay, L. (2009). *Elementary principals as technology instructional leaders*. Paper presented at the NECC.

Matthews, A. W. (2002). *Technology leadership at a junior high school: A qualitative case study*. Unpublished doctoral dissertation, University of Nevada.

McLeod, S., & Richardson, J. W. (2013). Supporting effective technology integration and implementation. In M. Militello and J.I. Friend (Eds.), *Principal 2.0: Technology and educational leadership*. Charlotte, NC: Information Age Publishing.

Means, B., Roschelle, R., Penuel, W., Sabelli, N. & Haertel, G. (Eds.) (2004). *Technology's contribution to teaching and policy: Efficiency, standardization, or transformation?* (Vol. 27). Washington, DC: American Educational Research Association.

Mehlinger, H. D., & Powers, S. M. (2002). *Technology and teacher education: A guide for educators and policymakers*. Boston: Houghton Mifflin.

O'Dwyer, L. M., Russell, M., & Bebell, D. J. (2004). Identifying teacher, school and district characteristics associated with elementary teachers' use of technology: A multilevel perspective. *Education Policy Analysis Archives*, *12*(48). Retrieved May 20, 2013 from http://epaa.asu.edu/epaa/v12n48/.

OECD. (2005). *Are students ready for a technology-rich world? What PISA studies tell us*. Paris: OECD.

Otto, T. L., & Albion, P. R. (2004). *Principals' beliefs about teaching with ICT*. Paper presented at the International Conference of the Society for Information Technology and Teacher Education.

Plano-Clark, V. L. P., & Creswell, J. W. (2015). *Understanding research: A consumer's guide*. (2nd Ed.), Boston, MA: Pearson.

Redish, T., & Chan, T. C. (2007). Technology leadership: Aspiring administrators' perceptions of their leadership preparation program. *Electronic Journal for the Integration of Technology in Education*, 6, 123-139.

Richardson, J. W., Bathon, J., Flora, K. L., & Lewis, W. D. (2012). NETS•A scholarship. *Journal of Research on Technology in Education*, *45*(2), 131-151.

Rogers, P. L. (2000). Barriers to adopting emerging technologies in education. *Journal of Educational Computing Research, 22*(4), 455-472.

Sandholtz, J. H., Ringstaff, C., & Dwyer, D. (1997). *Teaching with technology*. New York: Teachers College Press.

Schacter, J. (1999). *The impact of technology on student achievement: What the most current research has to say*. New York: Milken Exchange on Educational Technology, Milken Family Foundation.

Schiller, J. (2002). Interventions by school leaders in effective implementation of information and communications technology: Perceptions of Australian principals. *Technology, Pedagogy and Education*, *11*(3), 289-301.

Schiller, J. (2003a). The elementary school principal as a change facilitator in ICT integration. *The Technology Source Archives at the University of North Carolina July/August*. Retrieved June 23, 2012 from http://ts.mivu.org/default.asp?show=article&id=1034.

Schiller, J. (2003b). Working with ICT: Perceptions of Australian principals. *Journal of Educational Administration, 41*(2), 171-185.

Schreiber, J. B., & Asner-Self, K. (2011). *Educational research. The interrelationship of questions, sampling, design, and analysis*. NJ: Wiley.

Shattuck, G. (2010). Understanding school leaders' role in teachers' adoption of technology integration classroom practices. In M. Orey et al. (eds.), *Educational media and technology yearbook,* 35, 7-28, New York, NY: Springer.

Sincar, M. (2009). *An analysis of Turkish elementary school administrators' technology leadership roles*. Unpublished doctoral dissertation, Inonu University, Dep. of Educational Sciences, Malatya.

Sincar, M. (2010). Reliability and validity study of the inventory of technology leadership roles. *Journal of Education Research, 3*(4), 311-320.

Sincar, M., & Aslan, B. (2011). Primary school administrators' views about technology leadership roles. *Gaziantep University Journal of Social Sciences Institute, 10*(1), 571-595.

Smeets, E. (2005). Does ICT contribute to powerful learning environments in primary education? *Computers & Education, 44*(3), 343-355.

Tan, S. C. (2010). *School technology leadership: Lessons from empirical research*. Paper presented at the Proceedings of ASCILITE, Sydney. Retrieved January 12, 2013 from http://www.ascilite.org.au/conferences/sydney10/procs/Seng_chee_tan-full.pdf .

Tearle, P. (2003). ICT implementation: what makes the difference? *British Journal of Educational Technology, 34*(5), 567-583.

Thomas, W. R. (1999). *Educational technology: Are school administrators ready for it?* Retrieved 12 May, 2009, from http://www.sreb.org/

Tondeur, J., Cooper, M., & Newhouse, C. P. (2010). From ICT coordination to ICT integration: A longitudinal case study. *Journal of Computer Assisted Learning*, 26, 296-306.

Turan, S. (2002). The role educational administrators in terms of effective use of technology at the school. *Educational Administration*, 30, 271-274.

UNESCO. (2002). *Open and distance learning: Trends, policy, and strategy considerations*. Paris: UNESCO.

UNESCO. (2003). *ICT for education in Asia-pacific: ICT policy and strategy.* Bangkok: UNESCO.

van Braak, J., Tondeur, J., & Valcke, M. (2004). Explaining different types of computer use among primary school teachers. *European Journal of Psychology of Education*, *19*(4), 407-422.

Voogt, J., & Knezek, G. (Eds.) (2008). *International handbook of information technology in primary and secondary education*. New York: Springer.

Wachira, P., & Keengwe, J. (2011). Technology integration barriers: Urban school mathematics teachers' perspectives. *J Sci Educ Technol*, 20, 17-25.

Williams, D., Coles, L., Wilson, K., Richardson, A., & Tuson, J. (2000). Teachers and ICT: Current use and future needs. *British Journal of Educational Technology, 31*(4), 307-320.

Wilmore, D., & Betz, M. (2000). Information technology and schools: the principal's role. *Educational Technology & Society, 3*(4), 12-19.

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

Yu, C., & Durrington, V. A. (2006). Technology standards for school administrators: An analysis of practicing and aspiring administrators' perceived ability to perform the standards. *NASSP Bulletin*, *90*(4), 301-317.

Zhao, Y., Pugh, K., Sheldon, S., & Byers, J. (2002). Conditions for classroom technology innovations: Executive summary. *Teachers College Record*, *104*(3), 482-515.

Okul Müdürlerinin Teknoloji Liderliği Rolleri ve Profilleri İle İlköğretim Sınıflarındaki Teknoloji Entegrasyonu Arasındaki İlişki[6]

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Giriş

Okullar her geçen gün teknoloji yönünden daha zengin kurumlar haline gelmektedir. Bu durumun yol açtığı değişmeler bir yandan eğitimde reform çabalarına destek olurken (Means, Roschelle, Penuel, Sabelli & Haertel, 2004; Gulbahar & Guven, 2008; Tezci, 2009), diğer yandan öğrencilerin bilgi toplumunda ihtiyaç duyacakları becerilerle donatılması sürecine katkı sağlamaktadır (UNESCO, 2002; Kozma & Wagner, 2006). Alanda yapılan araştırmalar da BİT ile zenginleştirilmiş öğrenme ortamlarının eğitimin hedeflerine ulaşmasında önemli katkılar sağladığını ortaya koymaktadır (Sandholtz, Ringstaff, & Dwyer, 1997; Schacter, 1999; OECD, 2005). Bunun farkında olan eğitim alanındaki politika yapıcı ve karar vericiler, BİT'in eğitimde daha çok kullanılması için çaba göstererek (UNESCO, 2003), önemli miktardaki parasal kaynağı bu konuya ayırmaktadırlar (Kozma, 2005).

Yeni teknolojilerin eğitimle başarılı bir şekilde bütünleştirilmesi ve öğretmenlerin bilgi teknolojilerini derslerinde etkili bir şekilde kullanabilmesi sürecindeki önemli faktörlerden birisi okul yöneticileri ve onların davranışlarıdır (Flanagan & Jacobsen, 2003; Redish & Chan, 2007). Eğitim yöneticilerinden, bu süreçte etkili bir liderlik yaparak okuldaki BİT'in kullanımına yön vermeleri beklenmektedir (Kearsley & Lynch, 1992; Akbaba-Altun, 2002; Brooks-Young, 2002; Flanangan & Jacobsen, 2003; Anderson & Dexter, 2005). Bu bağlamda bir teknoloji lideri olarak okul yöneticisinden beklenen; bilgi ve iletişim teknolojileri konusunda okul, öğretmen ve öğrencilerine öncülük yapmak, onları bu teknolojilerin kullanımı konusunda teşvik etmek, öğretmenlerin bu konuda eğitimlerini sağlayarak ve teknolojinin etkin bir biçimde okul yönetiminde kullanılmasını örgütleyerek teknolojiyi eğitimle bütünleştirme konusunda etkili bir süreç ortaya koymalarıdır (Turan, 2002).

İlgili alan yazında teknolojiden yararlanılması ve öğrencilerin motive edilmesi ve daha etkili öğrenmelerinin sağlanması için BİT'in öğrencilerin öğrenme deneyimleriyle bütünleştirilmesi gerektiği belirtilmiştir (Otto & Albion, 2004; Voogt & Knezek, 2008). Teknolojinin eğitimle bütünleştirilmesi farklı şekillerde tanımlanmaktadır (Bebell, Russell, & O'Dwyer, 2004; Koçak-Usluel, Kuşkaya-Mumcu, & Demiraslan, 2007). Koçak-Usluel ve diğerlerine göre (2007) teknolojinin eğitimle bütülenştirilmesi, teknolojinin eğitim programında belirtilen öğrenme hedeflerine ulaşmak için kullanılmasıyla ilgilidir. Bebell vd. (2004) ise teknolojinin eğitimle bütünleştirilmesinin daha çok öğretmenlerin sınıfta bilgisayar

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kullanımıyla ilgili olduğunu belirtmiştir. Teknolojinin eğitim sürecine dahil edilmesi sadece öğretmenlerin yaptıklarıyla sınırlı değildir. Teknoloji lideri olarak okul yöneticilerinin bu konudaki çabaları da önemli katkılar sağlamaktadır.

Teknoloji liderliği, eğitimde BİT'in etkili bir biçimde kullanımına olanak sağlayan, örgütsel kararlar, politikalar ve eylemlerin bütünüdür (Anderson & Dexter, 2005). Teknoloji lideri olarak eğitim yöneticilerinden beklenen, sürekli değişen eğitim çevrelerinin taleplerine cevap verebilmek amacıyla, güncel teknolojilerin nasıl kullanılacağına ilişkin stratejiler üretmeleridir. Bu yolda eğitim yöneticileri vizyon oluşturur, personelin eğitimini sağlar, öncelikleri belirler, kaynakları paylaştırır ve örgütsel düzeni sağlarlar. Bir teknoloji odaklı değerlendirme ve inceleme sistemi oluşturmak, eğitim sürecinin kendine özgü ihtiyaçlarını karşılamak amacıyla titiz bir seçim süreci gerçekleştirmek, bu konuda eğitimin içinde ve dışında yer alan uzmanlardan destek almak, teknoloji liderliğine örnek olacak eylemlerdir. Bununla beraber, teknoloji liderinin, eğitimin tüm paydaşlarına yönelik bilgi teknolojilerinin eğitimde etkin kullanımına ilişkin model olabilecek standartlara da sahip olması beklenmektedir. Bu konuda özellikle Amerika Birleşik Devletleri ve Kanada'da gerçekleştirilen araştırmalar, eğitim yöneticileri için teknoloji liderliği standartlarının belirlenmesinin ve bilgi teknolojilerindeki yeniliklere paralel olarak sürekli güncellenmesinin öncüleri olarak görülebilir (Yee, 2000; Redish & Chan, 2007).

Literatürde, okul müdürlerinin liderlik rolleri/stilleri ile okullarda teknoloji kullanımı arasındaki ilişki incelemek amacıyla çeşitli çalışmalar yapılmıştır. Hughes ve Zachariah (2001) tarafından yapılan çalışma, yöneticilerin sergiledikleri kolaylaştırıcı liderlik stilinin, teknolojinin örgüt içinde yayılımını ve kullanımını etkilediğini işaret etmektedir. Benzer şekilde, Dooley (1998) de değişim-odaklı liderliğin bulunduğu okulların teknolojinin yayılımı ve kullanımı konusunda diğer okullardan farklı olduğunu ortaya koymuştur. Zhao, Pugh, Sheldon ve Byers (2002) ise, BİT teknolojilerinin okulda başarılı bir şekilde kullanılabilmesi için destekleyici bir öğrenme ortamının kritik öneme sahip olduğunu ifade etmiştir.

Bu araştırmaların yanı sıra, teknoloji liderliğinin öğretmenlerin teknoloji kullanımına etkisini konu alan az sayıda çalışmaya rastlanmıştır. Bu çalışmalardan birisinde Rogers (2000), öğretmenlerin teknoloji liderliği algıları ile, derslerinde teknoloji kullanımları arasındaki ilişkiyi analiz etmiştir. Çalışma sonuçları, müdürlerini teknoloji kullanımı konusunda destekleyici rolde gören öğretmenlerin, derslerinde teknolojiyi kullanma olasılıklarının arttığını göstermiştir. Cox'un (1997) çalışması da, müdürlerin teknoloji liderliği rollerinin, öğretmenlerin sınıf içi BİT kullanımları üzerinde büyük etkisi olabileceğini ortaya koymaktadır. Anderson ve Dexter (2005), okuldaki teknoloji kullanımını etkileyen faktörleri incelediği geniş kapsamlı araştırmalarında, teknoloji liderliğinin, okulda teknoloji kullanımının ve teknolojinin eğitimle bütünleştirilmesinin en güçlü belirleyicisi olduğu sonucuna ulaşmıştır.

Teknolojinin eğitimle bütünleştirilmesiyle ilgili alan yazınının odağında ağırlıklı olarak öğretmenler ve onların sınıf içi faaliyetleri yer almakta (O'Dwyer, Russell, & Bebell, 2004), okul müdürlerinin bu süreçteki rolleri ise göz ardı edilmektedir (Afshari vd., 2008). Oysa sınıfı etkileyen teknolojiye ilişkin kararlar genellikle sınıf dışında alınmaktadır. Bu nedenle teknolojiyle ilgili okul düzeyindeki politikaların incelenmesi büyük öneme sahiptir (Hew & Brush, 2007). Beklenen iyileşmelerin gerçekleşebilmesi için, teknolojinin eğitimle bütünleştirilmesi ile okul liderliği arasında sağlam bir bağ kurulması gerekir (Thomas, 1999).

Okul müdürlerinin teknoloji liderliği davranışları ile okullarda ve derslerde teknolojinin eğitimle bütünleştirilmesi/kullanımı arasındaki ilişkileri inceleyen araştırmalara ihtiyaç olduğu bir gerçektir (Kuzu, 2007; Macaulay, 2009; Tan, 2010; Wilmore & Betz, 2000). Bu nedenle, bu araştırmada okul yöneticilerinin teknoloji liderliği ile teknolojinin okullarda kullanımı arasındaki ilişki incelenerek ilgili alan yazına katkı sağlamak amaçlanmaktadır.

Yöntem

Bu çalışma, tarama modelinde desenlenmiş ilişkisel bir araştırmadır. Araştırmada öncelikle okul yöneticilerinin teknoloji liderliği rolleri ile teknolojinin eğitimle bütünleştirilmesi arasında anlamlı ilişkilerin olup olmadığı incelenmiş; ortaya çıkan sonuçlar doğrultusunda toplanan veriler üzerinde kümeleme analizi yapılarak katılımcı öğretmenlerin teknoloji liderliği algılarına göre kümelere ayrılmıştır. Araştırma sürecinde elde edilen verilerin öncelikle normal dağılım gösterip göstermediğini belirlemek için Kolmogorov-Smirnov testi yapılmış, daha sonra korelasyon analizine tabii tutulmuştur. Analiz sonucunda verilerin normal dağılım göstermediği görülmüş ve parametrik olmayan Sperman's Rank korelasyonu (Landau & Everitt, 2004; Coakers, 2005) tercih edilmiştir. Kümeleme analizi için İki Adım Kümeleme Analizi (Two Step Cluster Analysis) yöntemi kullanılmıştır. Ardından elde edilen kümeler arasında teknolojinin eğitimle bütünleştirilmesine yönelik öğretmen algıları açısından anlamlı fark olup olmadığı test edilmiştir. Bu aşamada ise bağımsız örneklem t-testi kullanılmıştır. Tüm analizler SPSS 15 yazılımı ile gerçekleştirilmiştir. Bu araştırma 2012-2013 eğitim-öğretim yılında, küme örnekleme yoluyla belirlenen 16 ilköğretim okulunda görevli 352 öğretmenin katılımıyla gerçekleştirilmiştir.

Çalışmada iki farklı veri toplama aracı kullanılmıştır. Okul müdürlerinin teknoloji liderliği rollerine ilişkin öğretmen algılarını belirlemek üzere, Sincar (2010) tarafından geliştirilen "İlköğretim Okulu Yöneticilerinin Teknoloji Liderliği Rolleri" ölçeği kullanılmıştır. Toplam 29 maddeden oluşan ölçekte 4 alt boyut bulunmaktadır. Ölçek, toplam varyansın % 68,73'ünü açıklamaktadır. Bu araştırmada, ölçeğin güvenirlik analiz sonucunda Cronbach Alpha değeri .96 olarak hesaplanmıştır. Bu katsayı ölçeğin güvenirliğinin oldukça yüksek olduğunu göstermektedir (Cohen, Manion, & Morrison, 2007). Çalışma kapsamında, öğretmenlerin teknolojiyi eğitimle bütünleştirme düzeyini belirlemek amacıyla van Braak vd. (2004) tarafından geliştirilen "Classroom Use of Computers" ölçeği kullanılmıştır. Ölçek toplam 8 maddeden oluşmaktadır. Bu ölçek için açımlayıcı faktör analizi yapılmıştır. Faktör analizi sonucunda, "Classroom Use of Computers" ölçeği için KMO değeri .826 olarak belirlenmiş ve elde edilen Bartlett değerinin anlamlı olduğu görülmüştür ($X^2_{(28)}$ =789.901, p=.00). Tek faktörlü bir yapıya sahip olan ölçeğin toplam varyansın % 44,812'sini açıkladığı görülmüştür. Ölçeğin güvenirliği için Cronbach Alpha iç tutarlılık katsayısı .82 olarak hesaplanmıştır.

Bulgular

Yapılan analizler sonucunda okul müdürlerinin teknoloji liderliği rolleri ile teknolojinin eğitimle bütünleştirilmesi arasında düşük düzeyde, olumlu yönde bir ilişkinin olduğu görülmüştür (rho=,191; p<.01). Teknoloji liderliğinin alt boyutları ile teknoloji liderliği arasındaki ilişkiler ise şu şekildedir: insan merkezlilik (rho=,239; p<.01); vizyon (rho=,203; p<.01); iletişim ve işbirliği (rho=,143; p<.01) ve destek (rho=,203; p<.01).

Kümeleme analizi sonucunda; çalışma grubunda yer alan öğretmenlerin görüşlerine göre, okul yöneticilerinin teknoloji liderliği profilleri "yüksek" ve "düşük" olmak üzere iki profil grubuna ayrılmıştır. İki profilde yer alan öğretmenlerin eğitimde teknoloji kullanımları arasında anlamlı fark (t=2.776; p < 0.05) olduğu görülmüştür. Bunlardan Yüksek (Teknoloji Liderliği Profili) TLP'ne sahip olan öğretmenler, derslerinde Düşük (Teknoloji Liderliği Profili) TLP'ne sahip öğretmenlerden istatistiksel olarak anlamlı şekilde teknolojiyi daha fazla (Mean Difference= 0.211) kullanmaktadır. Sonuç olarak Yüksek TLP'ne sahip öğretmenlerin derslerinde teknoloji kullanımlarının, Düşük TLP'ne sahip öğretmenlere göre daha yüksek olduğu görülmüştür.

Tartışma ve Sonuç

Bu araştırmada elde edilen sonuçlara göre, öğretmen algılarına göre okul müdürlerinin teknoloji liderliği rolleri ile teknolojinin eğitimle bütünleştirilmesi arasında düşük düzeyde, olumlu bir ilişki bulunmuştur. Yu ve Durrington'a göre (2006), okul yöneticileri/liderleri, eğitimdeki her türlü yenilik gibi eğitim teknolojilerinin de etkin bir şekilde kullanılıp kullanılmayacağını belirleyen temel bir role sahiptir. Chang (2008), okul müdürlerinin teknoloji liderliği rolleri ile öğretmenlerin eğitim teknolojilerini derslerine dahil etmeleri arasında güçlü bir ilişki olduğunu ifade ederek, okullarda teknolojinin etkin bir şekilde kullanılması için teknoloji liderliğinin bir gereklilik olduğunu ileri sürmektedir. Anderson ve Dexter (2005) yaptığı çalışmada, teknoloji liderliğinin okullardaki teknoloji kullanımının ve bütünleştirilmesinin güçlü bir yordayıcısı olduğunu ortaya koymuştur. Literatürde yer alan benzer çalışmalar da, okul müdürlerinin teknoloji liderliği rolleri ile okullardaki teknolojinin eğitimle bütünleştirilmesi arasında pozitif bir ilişki olduğunu ortaya koymaktadır (Cox, 1997; Rogers, 2000; Hughes & Zachariah, 2001; Zhao vd., 2002; Leng, 2008).

Teknoloji liderliğinin alt boyutları ile teknolojinin kullanılması/bütünleştirilmesi arasındaki ilişki bakımından en yüksek ilişkinin insan merkezlilik ve teknolojinin eğitimle bütünleştirilmesi arasında ortaya çıktığı görülmüştür. Diğer sosyal sistemler gibi okullar da insanlardan meydana gelmiştir. Okul yöneticisi, okul sosyal sisteminde bireyleri ve bireylerin ihtiyaçlarını görmezlikten gelmemelidir (Hoy & Miskel, 2008). Okul yöneticilerinin eğitim teknolojilerini okula kazandırma sürecinde, öğrenci ve öğretmenlerin ihtiyaçlarını göz önünde bulundurarak karar alması gerekmektedir (Sincar, 2009).

En düşük ilişkinin ise iletişim ve işbirliği alt boyutu ile teknolojinin eğitimle bütünleştirilmesi arasında ortaya çıktığı görülmüştür. Bu konuyla ilgili yapılan araştırmalar, teknolojinin eğitime dahil edilmesi sürecinde okul yöneticilerinin öğretmenlerle iletişim ve işbirliği içerisinde olması gerektiğini vurgulamaktadır (Schiller, 2003a; Cakir, 2012). Teknoloji liderlerinin önemli bir görevi de, okulda sıkı bir işbirliği sağlamaktır (Anderson & Dexter, 2005).

Yapılan kümeleme analizi sonucunda elde edilen profillerin frekans dağılımları incelendiğinde, katılımcı öğretmenlerin çoğunun (% 65,6) okul yöneticilerinin Yüksek TLP'ne sahip olduğunu düşündüğü görülmektedir. Öğretmenlerin geri kalanı (% 34,4) ise, okul yöneticilerinin Düşük TLP'ne sahip olduğunu düşünmektedir.

Elde edilen profiller daha yakından incelendiğinde, Düşük-TLP'ne sahip olan yöneticilerin, insani ilişkilerinin zayıf ve öğretmenlerle işbirliği yapmaya pek yanaşmadıkları görülmektedir. Ayrıca, teknolojinin öğretimde kullanımına ilişkin vizyonlarının yetersiz ve

öğretmenlere bu konuda desteklerinin az olduğu söylenebilir. Buna karşın, Yüksek-TLP'ne sahip olan okul yöneticilerinin ise, insan ilişkilerinde daha başarılı ve öğretmenler ile işbirliğine daha açık oldukları söylenebilir. Buna ek olarak, teknolojinin öğretimlerde nasıl kullanılabileceğine ilişkin daha güçlü bir vizyonları vardır ve öğretmenlere bu konuda daha fazla destek olmaktadırlar.

Teknolojinin eğitim sürecinde etkili bir şekilde kullanılmasının parametrelerinden biri, okul yöneticilerinin ve öğretmenlerin teknolojinin eğitimde etkili bir şekilde nasıl kullanılacağı konusunda gerekli bilgi ve becerilere sahip olmasıdır. Okul yöneticilerinin ve öğretmenlerin bu bilgi ve becerileri edinmesinin yollarından biri, teknolojinin eğitimle bütünleştirilmesi konusunda düzenlenecek mesleki gelişim programlarıdır. Bu tür programlar, okullarda teknoloji kullanımının öğrenci öğrenmesi üzerindeki etkilerinin anlaşılması ve bu yönde bir bakış açısının kazanılması konusunda bir fark oluşturabilir. Fakat daha da önemlisi, okul yöneticilerinin okullarındaki öğretmenleri teknolojiyi etkili bir şekilde kullanması konusunda teşvik etmesi ve bu konuda liderlik etmesidir. Zira ülkemizde FATİH Projesi gibi çok ciddi yatırımların yapıldığı projelerin etkili olması, okul yöneticilerinin ve öğretmenlerin teknolojiyi etkili kullanma konusundaki bilgi ve becerilerine ve teknoloji kullanımının öneminin farkında olmalarına bağlıdır. Bu süreçte okul yöneticilerinin çabaları, takım çalışması ve teknoloji kullanımına ilişkin değerlendirme sistemleri, teknolojinin eğitimle bütünleştirilme sürecini kolaylaştırabilir.