TEACHERS' PERCEPTION IN RELATION TO PRINCIPLES' TECHNOLOGY LEADERSHIP: 5 PRIMARY SCHOOL CASES IN TURKISH REPUBLIC OF NORTHERN CYPRUS

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ABSTRACT

The aim of this study is to determine primary-school teachers' perceptions related to technology leadership of primary-school principals. It is observed that most of the principals do not use technology leadership in their schools effectively. This is to say, technology is not effectively included into administration and curriculum. This is a quantitative research. The setting of this study is primary schools in TRNC. Before collecting data, validity and reliability analysis of the questionnaire are conducted. In general, teachers agree that the principles they work with are competent enough in technology leadership at "a little" and "often" levels. There is a significant difference in terms of gender of the teachers but there is not any significant difference in the other variables.

INTRODUCTION

We have heard many times in recent years that the impact of technology is one of the most critical issues in education. If we are citizens of Western nations, then technology pervades almost everything in our lives from top to down. Therefore, education is one of the fields where technology should be used effectively. Education is producing knowledge, which is the source of technology production. Education is a field which needs to get benefit from technology.

Leadership and Educational Leadership

Leadership creates institutions which give power to the employees to meet their needs. It is morally on purpose and promoting. This means those even if leaders have nothing to do, they can create social architectures who choose and define goals and vision of the work power with their skills (Evans, 1996, p. 4). Howard (2005, p. 385) defines leadership as "the process of verbal and non-verbal communication" where there is "coaching, motivating, inspiring, directing, guiding, supporting and counseling others". As a result, leadership can help people to find their own ways in order to reach their aims.

Educational leadership is a way of showing the leadership skills in educational institutions. Schools are educational institutions. A school principal's being a leader is closely related his/her being able to meet the school's needs and direct school's human and material resources carefully.

A school leader should keep students at the heart, be a learning leader, act ethically, put instructional leadership first, practice efficient management, build strong relationships, know what to expect, orchestrate school-community, be partnerships and be lifelong learners (Alvy, & Robbins, 2005, p. 50-54).

Influence of Technology to Education

Technologies have key roles to play in supporting new conditions of schooling. Well-designed technologies can deeply engage students in learning; can effectively support collaborative work and the more complex interactions that are needed. Technologies do not themselves bring about these conditions and do not revolutionize schooling. These resources must be used in designing reformed schools, but should not be isolated in a separate room.
Baker & Hawkins (1992) emphasize critical design issues that must be carefully articulated with each other for the effective use of technology for learner-centered schools. First, the software design itself must support productive inquiry by students and coordinated work with others. Second, it is extremely important to pay direct attention to the design of activities in which the technology is appropriately embedded. Third, the design for staff development must be quite focused and continuous over a relatively long period of time. Curricular and social organizational issues must be embedded with the technical ones. Principals must be prepared for the integration of technology. Many school-level efforts fail because the administration does not adequately understand the issues or support the plans. Professional development for school leaders is needed.

Technology Leadership

Principals play key roles in using technology. If a principal does not introduce, and even be an obstacle, new technology to the staff and school, the staff, especially the teachers can not use technology effectively, and they become stranger to or are afraid of technology usage. Yee (2000, p. 291) suggests that characteristics of Information and Communications Technology Leadership at schools are "equitable providing, learning-focused envisioning, adventurous learning, patient teaching, protective enabling, constant monitoring, entrepreneurial networking, and careful challenging". Therefore, principals should

have some basic competencies in order to perform technology in their schools. Hancock (1990, p. 85-86) indicates that school principals should "use computers for personal productivity by learning the basic operations of word processing, database and spreadsheet software". This is because as they feel comfortable, teachers will become more confident. Hancock (1990, p. 85-86) adds that principals should be "aware of the many administrative tasks microcomputers can simplify, learn to determine appropriate computer applications for their schools, have enough information to select the most appropriate hardware and software to meet their schools' needs and then, develop true plans to implement their features". These are the necessary basic competent each principal needs to be armed with. There are six National Educational Technology Standards for Administrators standards, which include:

I. Leadership and Vision;
II. Learning and Teaching;
III. Productivity and Professional Practice;
IV. Support, Management, and Operations;
V. Assessment and Evaluation; and
VI. Social, Legal, and Ethical Issues (ISTE, 2002).

Establishing clear expectations can help principals increase successful use of technology in schools. The reasons for technology implementation and possible challenges to such an effort should be made transparent to the educational community.

PROBLEM STATEMENT AND RESEARCH QUESTIONS

The statement of the problem is how primary school teachers perceive the technology leadership of their school's principal in terms of teachers' gender, level of their education, seniority, length of service in that school, age and school size. Therefore, the aim of this study is to determine primary-school teachers' perceptions related to technology leadership of primary-school principals. The research questions of the study are as follows:

1. What are the demographic characteristics of the teachers participating to the study?
2. What level of perception do the teachers have in relation to technology leadership of their principal in terms of teachers' gender, level of their education, seniority, length of service in that school, age and school size?
3. Is there a significance difference between principals' perception of technology leadership in terms of teachers' gender, level of their education, seniority, length of service in that school, age and school size?

METHODOLOGY

Subjects

There are 2 primary schools both from Lefkosa and Magosa and 1 primary school from Girne; 5 primary school teachers are the study group of this study. There are not any defined samples in these schools. The questionnaires are administered randomly. The schools constituting the study group of this study and number of questionnaires administered to these schools can be seen in table 1.

Table 1: The schools constituting the study group and number of questionnaires administered to the schools

Name of the School	n
Şehit Ertuğrul Primary School	14
Şehit Tuncer Primary School	14
23 Nisan Primary School	19
Şehit Osman Ahmet Primary School	18
Gazi Primary School	7
Total	**72**

Among those, Şehit Ertuğrul and Şehit Tuncer Primary Schools are in Lefkosa; Şehit Osman Ahmet and Gazi Primary Schools are in Magosa and 23 Nisan Primary School is in Girne. Most of the questionnaires are from 23 Nisan Primary School. The reason for this may be that it is the biggest primary school in Turkish Republic of Northern Cyprus.

Although 15 questionnaires are distributed to the teachers teaching at Ataturk Primary School, Lefkosa, none of them are back.

Instrumentation

The instrument of this study is downloaded from http://www.insightro.com/surveys/ web address. There are 22 items in the original instrument. This instrument is translated into Turkish, native tongue of the samples and 1 open-ended question is added to the questionnaire as item number 23. Before collecting data, validity and reliability analysis of the questionnaire are conducted.

Factor analysis is applied for structure validity of the questionnaire. After analysis, it is found out that the questionnaire has one-component. Component-factor loading is between ,776 and ,874. Factor loadings of the questionnaire are quite high. Since the questionnaire has one-component, rotation varimax method is not applied. Total variance explained is 69.82 % and

it is quite high for one-component questionnaire. Reliability analysis on item-total correlation ranges from ,751 to ,877. Alpha score is measured for reliability analysis which is ,9788. After these analyses, it is decided that the instrument is reliable and valid.

DATA ANALYSIS

The questionnaires have been analyzed using SPSS program. Demographic information about the teachers participating to the study is determined by using frequency and percentages. Perceptions of the teachers in relation to principals' technology leadership according to teachers' gender, level of education, seniority, length of service in that school and school size have been analyzed by using frequency, percentage and arithmetic mean scores. T-test has been used in order to see whether there is a meaningful difference between principals' perception of technology leadership in terms of teachers' gender, school size they teach and level of education. Also, one-way ANOVA has been applied in order to see if there is a meaningful difference between principals' perception of technology leadership in terms of teachers' seniority, length of service in that school and age.

5 point likert type scale has been used for analyzing the data. Applying the formula, each interval is divided into 5 equal parts. Never 1,00 – 1,79, Rare 1,80 – 2,59, A little 2,60 – 3,39, Often 3,40 – 4,19 and Always 4,20 – 5,00

FINDINGS

Demographic Characteristics of the Samples

Demographic characteristics of the samples can be seen in table 4.

Table 2: Demographic Information of the Samples

		N	Percentage (%)
Gender	Male Female	40 32	55,6 44,4
Age	Up to 30 31 – 40 41 and above	15 36 21	20,8 50,0 29,2
Seniority	0 – 10 11 – 20 21 and more	20 35 17	27,8 48,6 23,6
Length of service	0 – 8 9 – 16 17 and more	42 18 12	58,3 25,0 16,7
Level of Education	Undergraduate Graduate	58 14	80,6 19,4
Total		**72**	**100**

40 % of the teachers participating to the study are males and 32 % of them are females. Most of the teachers are at their middle ages (between 31-40 ages). There are only 15 young teachers (up to 30 ages) and 21 older teachers (ages starting from 41 and up). Most of the young teachers are temporary teachers. 20 teachers are senior from 0 to 10 years. 35 teachers have got 11-20 years of seniority and 17 teachers' seniority is 21 years or more. Meeting highly senior teachers in those schools may be because of the schools, which are at the city centers. Length of service in that school is intensively with the group up to 8 years. There are 42 teachers in this group. Most of the teachers have bachelor's degree. On the other hand, number of teachers having completed their graduate studies cannot be underestimated.

School Size

In general, there are 3 types of school sizes in the literature, which are small, middle and large schools (Anderson & Dexter, 2005, p. 64). Since there are not many schools reached for this study, there are only two school sizes, which are small and large schools in this study. In the literature, a school having a population of 600 and over is accepted as a large school. In this study, schools having 600 and below population are accepted as small schools. This kind of separation is suitable for analyzing the data of this study.

Table 3: Distribution of number teachers and schools on school size

School Size	Number of Schools	School Teachers responding to the Questionnaire
Large	3	47
Small	2	25
Total	**5**	**72**

In table 3, it is clear that there are 3 large schools and 2 small schools. Large schools are Sehit Ertugrul, Tuncer (Lefkosa) and 23 Nisan (Girne) Primary Shools. Other 2 schools are Sehit Osman Ahmet and Gazi (Magusa) Primary Schools. In large schools, 47 teachers participate to this study. 25 teachers are samples from small schools.

Teachers' perceptions in relation to principals' technology leadership

Comparisons of the arithmetic mean scores on teachers' perception in relation to principles' technology leadership in terms of teachers' gender, level of education, school size, age, seniority and length of service can be seen in table 4.

Table 4: Perception of teachers in relation to principals' technology leadership in terms of teachers' gender, level of education, school size, age, seniority and length of service

		$\bar{x}$
Sex	Male	2,9
	Female	3,3
Level of Education	Undergraduate	3,2
	Graduate	2,8
School Size	Large	3,1
	Small	3,1
Age	0-30	3,4
	31-40	2,9
	41-above	3,2
Seniority	0-10	3,2
	11-20	3,0
	21-above	3,1
Length of Service	0-8	3,0
	9-16	2,9
	17-above	3,5

		N	$\bar{x}$	sd	df	t	P
Gender	Male	40	2,90	,84	70	2,13	,036
	Female	32	3,34	,91			
Level of Education	Undergraduate	58	3,15	,87	70	1,17	,25
	Graduate	14	2,84	,98			
School Size	Large	47	3,10	,83	70	,10	,92
	Small	25	3,08	,93			

General mean scores of all items show that in terms of gender, level of education and school size, teachers "a little" agree that the principles they work with is competent enough in technology leadership. In other words, in terms of gender, level of education and school size, teachers' perception towards their principles' technology leadership is "a little". (females score is $\bar{x}$=3,3 and males score is $\bar{x}$=2,9); (teachers at undergraduate level have $\bar{x}$ =3,2; graduate level have $\bar{x}$=2.8 scores) and (score of teachers at small school is $\bar{x}$=3,1 and large school is $\bar{x}$=3,1). Teachers whose ages are 30 or under 30 "often" ($\bar{x}$=3,4), ages between 31-40 "a little" ($\bar{x}$=2,9) and ages 41 and above 41 "a little" ($\bar{x}$ =3,2) agree that the principle they work is competent in using technology in their schools. In terms of seniority, teachers who have 10 years or less experience ($\bar{x}$=3,2), those who have experience between 11-20 ($\bar{x}$=3,0) and those who have 21 years or more experience "a little" ($\bar{x}$=3,1) agree that their principle is competent. In other words, in terms of seniority, teachers' perception towards their principles' technology leadership is "a little". In terms of length of service of that particular school, teachers' perception on their principles' technology usage is "a little" with the teachers teach at 8 years or less and 9-16 years ($\bar{x}$=3,0 and ($\bar{x}$=2,9 respectively). Teachers who work 17 years of more at the same school think that their principle "often" ($\bar{x}$ =3,5) competent in technology leadership (see table 4).

In the questionnaire there is an open ended question, which is asking what other ideas, suggestions and/or opinions the teachers want to add. The answers from the teachers are as follows:

> *The school principle is not sufficiently qualified in using technology and other innovations. The school has got a very limited budget. Ministry of Education has got serious difficulties in applying technology. Schools need to be evaluated in terms of possibilities they have.*

Testing the differences between teachers' perceptions in relation to principals' technology leadership in terms of teachers' gender, level of education, seniority, length of service in that school, age and school size. In order to see whether there is a significant difference between the teachers' perception in relation to principals' technology leadership in terms of teachers' gender, t-test has been applied. There is a significant difference between teachers' perception in relation to principles' technology leadership in terms of gender of the teachers [$t_{(70)}$=2,13, p<.05]. Female teachers' perception ($\bar{x}$=3,34) is more positive than male teachers ($\bar{x}$=2,90). In order to see whether there is a significant difference between the teachers'

perception in relation to principals' technology leadership in terms of teachers' education level, t-test has been applied. There is not any meaningful difference between teachers' perception in relation to principles' technology leadership in terms of level of education [$t_{(70)}$=1,17, p>.05]. Mean scores are very close to each other. Results can be seen in table 5.

Table 5: T-test results of perceptions of teachers in relation to principal's technology leadership in terms of teachers' gender, level of education and school size In order to see whether there is a significance difference between the teachers' perception in relation to principals' technology leadership in terms of school size, t-test has been applied. There is not any meaningful difference between teachers' perception in relation to principles' technology leadership in terms of school size [$t_{(70)}$=0,10, p>.05]. Mean scores are very close to each other (see table 5).

In order to see whether there is a significant difference between the teachers' perception in relation to principals' technology leadership in terms of teachers' age, one-way ANOVA has been applied and its results can be seen in table 6.

Table 6: One-way ANOVA results of perceptions of teachers in relation to principal's technology leadership in terms of teachers' age, teachers' seniority and teachers' length of service in that school

	Source of Variance	Sum square	df	Mean Square	F	P
Age	Among Groups	2,661	2	1,330	1,70	,19
	In Groups	54,011	69	,783		
	Total	56,671	71			
teachers' seniority	Among Groups	,620	2	,310	,38	,68
	In Groups	56,052	69	,812		
	Total	56,671	71			
teachers' length service that school	Among Groups	2,935	2	1,467	1,88	,16
	In Groups	53,737	69	,779		
	Total	56,671	71			

There is not any significant difference between teachers' perception in relation to principles' technology leadership in terms of teachers' age [$F_{(2-69)}$=1,70, p>.05]. When total arithmetic mean scores are taken into consideration, teachers who are 30 or under 30 have $\bar{x}$=3,4; teachers between the ages 31-40 have $\bar{x}$=2,9 and teachers who are 41 or above 41 have $\bar{x}$=3,2. Teachers of 30 or below years old may perceive their principal more positive, but there is not any significant difference between the scores. In order to see whether there is a meaningful difference between the teachers' perception in relation to principals' technology leadership in terms of teachers' seniority, one-way ANOVA has been applied. There is not any significant difference between scores of the teachers's perception in relation to principals' technology leardeship in terms of teachers' seniority. Seniority scores of the teachers according to the total arithmetic mean scores are very close to each other. [$F_{(2-69)}$ =0,38, p>.05]. One-way ANOVA analyis has been applied in order to see whether there is a meaningful difference between teachers' perception in relation to principals' technology leadership in terms of teachers' length of service in the school (see table 6).

There is not any significant difference between the scores on teachers's perception in terms of principals' technology leadership in terms of length of service the teachers have. [$F_{(2-69)}$=1,88, p>.05]. In table 6, it is clear at the total arithmetic mean scores that teachers working 17 years or more with the principal have $\bar{x}$=3,5, 8 years or less have $\bar{x}$=3,0 and teachers working together between 9-16 years have $\bar{x}$=2,9 mean scores. When teachers work together with the principal at great length, they have tendency to reject events. In other words, when teachers work together with the principal at great length, they perceive principal's technology leadership totally, or in general they perceive the principal, more positive.

DISCUSSION

Technology leadership is perceived differently among school levels. Anderson & Dexter (2005, p. 64) finds out in a study that level of technology usage is low in primary schools when they compare primary schools with secondary and high schools. This study is related to the level of technology leadership in primary schools. Teachers' perception shows that principals' technology usage is low. This finding is similar what Anderson and Dexter have found out in their study in relation to primary schools.

Analysing the results and taking the means of all items, it is found out that male and female teachers do not highly (little) perceive principals' technology leadership. Although there is low perception in both groups (male and female teachers), there is a significance difference between them. Male teachers may be more interested in technology than femlaes but their expectation may not be met properly.

In terms of teachers' level of education, undergraduate (teachers holding a Bachelor's degree) and graduate level (teachers

holding a Masters degree) teachers little perceive their principals' technology leadership. There is a difference between each group's mean scores, but there is not any meaningful difference between each group. It is clear that holding a masters degree or carrying out Ph.D studies does not create a difference in using educational leadership among primary school teachers.
In terms of school size, both large and small school teachers "a little" perceive their principal's technology leadership and mean scores of each group are close to each other. However, Anderson & Dexter (2005, p. 65) have found out in their study that large schools have got a separate budget and can form technical committees. Therefore, they are active in applying technology leadership. Teachers, who are 30 years old or below, perceive more positive their principal's technology leadership, however this result is surprising. Young teachers are seen more sensitive on technology use. I think that the main reason for this finding is that most of the young teachers are temporary teachers although they teach at the schools which are at the city center. Their main concern is having a lasting job. In terms of seniority, findings are similar to the findings related to the ages of the teachers. In other words, teachers who have less seniority have high perceptions. In terms of length of service in the same school, if the teachers' length of service is increasing, they perceive their principal's technology leadership more positive.
Wilmore & Betz (2000, p. 15) indicate that the main difficulty in applying technology at schools is financial limitations. In this study, in the open-ended questions, some teachers have emphasized the same difficulty.

CONCLUSION

None of the principal can pretend not see the speed of technologic development and changes. They need to ensure that their school teachers, staff and students use technology in their schools. Providing technology usage requires a revolution in the principals' thoughts. Therefore, school principals need to have a revolution in them before everything. They should not expect every step from the Ministry of Education. They should be proactive and initiative enough to set various dymanism into action. They need to prepare a strategy plan for the development of their school and take steps according to this plan. The principals need to use resources of the school for technological development of the school. Teachers' motivation needs to be high and the principle needs to contribute the teachers' personal development. In order to cause students to use technology in their studies, the principal himself/herself needs to use technology throughtout the school and in his/her office.

As further studies, it can be searched why there are not any differences found between the graduate levels of the teachers. In this study, there are not any differences found between the education levels of the teachers. The reasons of this finding can be a subject of another study. Also, perception of teachers teaching at rural and urban schools as well as teachers teaching at secondary and high schools are out of the scope of this study, but can be topics to other studies. Similarly, how socio-economic level of the schools influence technology leadership of the principals is another topic that needs to be explored further.

REFERENCES

Alvy, H. and Robbins, P. (2005). Growing into Leadership. *Educational Leadership*.pp.50-54.

Anderson, R.E., and Dexter, S.(2005). School Technology Leadership: An Empirical

Investigation of Prevalence and Effect.*Educational Administration Quarterly*.41(1),pp.49-82

Baker, T. and Hawkins, J. (1992). School restructuring and the roles of technology. Available at http://cct.edc.org/admin/publications, (28 January, 2007).

Evans, T., J. (1996). Transformational Leadership: *Overview of a human resources administrative practice*. ERIC DOCUMENT Reprodution Service. No: ED 402640.

Hancock, V. (1990). Technology. *Educational Leadership*. pp.. 85-86.

Howard, W., C. (2005). Leadership: four styles. *Education.* 126(2), pp. 384-391

International Society for Technology in Education. (2002). National educational technology standards for administrators. Washington, DC:

Lingard, B. and Christie, P. (2003). Leading theory: Bourdieu and the Field of Educational

Leadership: An Introduction and Overview to this Special Issue. Int. J. *Leadership in*

education, 6(4), 317-333.

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

Yee, D. L. (2000). Images of School Principals' Information and Communications

Technology Leadership. *Journal of Information Technology for Teacher Education*. 9(3), pp. 287-302.

http://www.insightro.com/surveys/ (5 December, 2006).