Differentiations Between The level of Technological leadership Skills of Quality Schools Administrators and Non Quality Schools Administrators'

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Abstract

The purpose of this paper is to determine and compare technolojical leadership competencies of directors of schools (pre-school, elementary and high school) which have won TQM (Total Ouality Management)Prices and which have not in Antalya. And also investigate how school principals affects the quality of schools which have won TQM (Total Ouality Management) Prices. The first three sub-problem of the study quantitative research methods and qualitative research methods were applied. To do that Technological leadership Questionaire which is developed by "the Center for the Advanced Study of Technology Leadership in Education (CASTLE) used to develop, test, and validate the assessment instrument.." was used. The questionaire has 32 questions. Technological leadership Questionaire was aplied to 700 teaches and 506 questionaire returned as filled. Six teachers who were actively worked in processes in Quality Management system from award winning schools were interviewed. Data were analysed by SPSS program. For the data collected via interviews is analised by coding.

Keywords: Technology Leadership, Total Quality Management, Educational Management

Introduction

For school administrators to provide effective leadership in their schools in the last years of the twentieth century, they must possess knowledge and understanding of the issues and capabilities of technology. They must also be able to use technology appropriately in the fullfilment of their roles of coordinator and communicator of school programs and activities (Southern Regional Education board, 2000, p,1)

Principals play many roles as successful leaders – problem solvers, decision makers, vision seekers, and relationship builders. Principals have several concerns, or quests , that are central to success- justice, teaching, purpose , resource, change, ownership, and autonomy. (Ackerman, Donaldson, and Bogert 1996).

Principles are ultimately responsible for determining the appropriate type of technology training fort the school staff. Dyrli (1996) suggest that successful professional development can be achieved by utilizing a number of key elements including: offering a variety of options, emphasizing skill development, providing hands on experiences, tailoring programs to local realities, using genuine teaching examples, and providing supporting materials.

Outstanding principals go beyond merely involving teachers in decision making, they encourage teachers to continously engage in identifying best practices (Senge, 1990; Watkins & Marsick, 1993).

Principles must understand technology and the importance that technology has on both managemant and instruction. However Thomas (1999) suggested that school leaders are inadequately trained in educational technology and "there is no strong link between school leadership and education technology" (p.3).

Mergendollar (1994) suggest that the role of the principal is essential in school technology use. Also for technology to become used across a district , leadership by the central administration, especially the superintendent is critical. These findings are supported by the organizational change research, which has consistently found that change efforts do not succeed without active administrative leadership, particularly by principals. Research has shown that leaders perform four important tasks: (a)obtaining resources, (b)buffering the Project from outside interference , (c)encourage staff, and (d) adapting standart operating procedures to the Project.

The technology leader should possess the leadership skills and competencies to establish a vision, direction, and guiding principles for integration of technology. Ried et. al. (1998) suggests that issues related to tecnology integration i. e., vision, time, Access, support, and assesment are not clearly understood by public school decision makers.

Technology leaders require knowledge in the area of planning, designing and evaluating technology and staff development programs. The technical aspect of the position requires knowledge and skills pertaining to information Access tools that can support curriculum and intruction. Having the ability to evaluate, troubleshoot, install, and maintain computer operating systems, software, and hardware that support classroom and administrative needs is also a top priority. The bottom line is that the technology leader needs to be very knowledgeable about curriculum and instruction in addition to having the skills to implement and maintain a variety of Technologies and network systems. (Ford , 2000 p. 91).

School principals roles and responsibilities are very complex and vary widely; for today's schools, they include technology – related knowledge. İn general principals find technology skills extremely important, but at the very least, they must have an understanding of how tecnology fits into the school enviroment. (peterson,2000 p. 66).

Educational technology is a valuable tool to achieve educational objectives. Particularly when combined with the other key factors that increase student achievement, such as clear measurable objectives, parental and community involvement increased time spent on task frequent feedback and teacher subject matter expertise, technology can help deliver significant and positive results. (CEO forum on technology and education , 2001,p.5).

Polles (1999) suggests that achievement has no relationship to technology presence. However the appropriate use of technology is to promote innovation toward school improvoment (Donavan , 1999). School leaders need to assure the staff that the goal of technology isto enhance instruction- not to replace it. Donavan (1999) suggests that full integration must embody the following characteristics. (1) be advantageous to current methods, (2)be compatible with needs and expectations, (3)be simple to use (4) be easily tried without a huge commitment to change, and (5)be observable and modeled by staff who embrace technology.

The most effective way for school leaders to show teachers the benefits of technology integration, is to engage them in developing a shared vision of school improvement (Byrom, 1998). School improvement that is articulated in the district technology plans will indicate to staff members reasonable expectations for success (Means & Olson , 1994).

Hope and Stakenas (1999) suggested three primary roles for the principal as technology leader: role model, instructional leader, and visionary. Principals must be "knowledgeable enough" about specific technology tools—such as e-mail, databases, the Internet, word processing, and simple spreadsheets—to model the use of technology for administrative and managerial tasks.

It is the principal's role to establish a vision for the school. Principals must establish a context for technology in the school and understand how the technology can be used to restructure learning, empower teachers, and help students become more technology literate (Brockmeier, Sermon, & Hope, 2005).

Principal' technological leadership strongly correlates with teachers' integration of educational technology into their curriculums (Rogers, 2000).

Technological leadership is vital for effective use of technology (Anderson and Dexter, 2005). In many countries educational reform plans shows that technological leadership has already become an important strategy for improving academic quality and student achievement (Chang, 2012).

Total Quality Management in Turkish School System

Seven basic Total Quality Management (TQM) implementation methods currently are being used in education. Three of them are Deming, EFQM and Baldrige awards that are adapted from manufacturing industry to higher education using benchmarking study. (Gençyılmaz ve Zaim,1999).

Many schools are employing Total Quality Management (TQM) techniques to improve quality, increase productivity, and decrease costs. The TQM process involves the complete transformation to a quality orientation and requires top-level commitment followed by substantial and comprehensive re-education of all personnel. In addition, the administration must develop a cooperative climate for change and recognize.

In Turkey TQM implementation studies goes back to 1995 but it started to implement in schools with the "National Ministry of Education Directive of Implementation of TQM" which declared in Nowember 1999. With this directive all the schools in all levels of education were responsible to implement TQM at their institutions. EFQM Model was selected to implement in all schools in Turkey. 208 schools from twenty three provinces in Turkey were identified as Curriculum Laboratory Schools (MLOs) where new management philosophies and educational approaches were applied to serve as models to other schools before the spread of new system. With the Ministry of National Education Provincial Organization Total Quality Management Implementation Project in 2001, TQM application was aimed to spread to all educational and instructional services all through Turkey. The expected outcomes of these projects were: (1) identification and solution of chronic problems at schools; (2) Increased motivation of teachers as a result of participative management; (3) prevention of waste of time, efforts and sources; (4) Improved conditions at schools; (5) Improved coordination, and communication among schools (MEB, 2002). With the declaration of "National Ministry of Education Directive of Awards of Implementation of TQM"in January 2005 schools applied for awards in two categories as "Team" and "Institution". Since than many pre-primary, primary, high schools applied for the awards. Since than 12 schools in Antalya won the TQM Price in national level.

In Turkey TQM (Total Quality Management) implementation studies started in the 1990s with the Curriculum Laboratory Schools (MLOs) project which is Implemented in 209 schools and supported by word bank.

In turkey still using models of EFQM for maintain Total Quality Management (TQM) studies. Every year in Turkey , The first three winning teams and organizations to schools national and local level quality awards are given. 11 schools in Antalya won the TQM Price in national and local level (pre-primary, primary, high schools applied for the awards)

Aim

The purpose of this paper is to determine and compare technolojical leadership competencies of directors of schools (pre-school, elementary and high school) which have won TQM (Total Ouality Management) Prices and which have not in Antalya . And also investigate how school principals affects the quality of schools which have won TQM Prices.

To do that answers were searched for these questions:

1- According to the teachers What is the level of technological leadership of school principals based on various sizes?
2- According to the teachers is there a significant difference the levels of technological leadership of school principals between level of school they work?
3- According to the teachers , Is there a a significant difference in levels of technological leadership of school principals between schools which have won Quality Prices and which have not?
4- According to teachers, How important is the school principal technological leadership behavior in terms of quality school?
5- According to teachers, what makes the school principal as a leader in technological in order to improve the quality ?
6- According to teachers, How does the school principal's technological leadership behavior affect the quality of education?

Methodology

In this section model of study, study group and information about data collecting tools are described.
The first three sub-problem of the study quantitative research methods and 4,5, 6 sub-problem of the study qualitative research methods were applied. To do that Technological leadership Questionaire which is developed by " the Center for the Advanced Study of Technology Leadership in Education (CASTLE) used to develop, test, and validate the assessment instrument.." was used. The questionaire has 32 questions. After finding difference between those schools qualitative research methods used to find answers to the first and second qouestions. Qualitative research is a method of inquiry employed in many different academic disciplines, traditionally in the social sciences (Denzin and Lincoln, 2005). Qualitative researchers aim to gather an in-depth understanding of human behevior and the reasons that govern such behavior (Mayring, 2000). The qualitative method investigates the *why* and *how* of decision making, not just *what*, *where*,*when*.

Hence, smaller but focused samples are more often needed than large samples (Yıldırım ve Şimşek, 2008). For the qualitative research Semi-structured Interview form which includes six open ended questions was used.

Population and Sample Selection

This study was carried out in Antalya Province on teachers working at state schools.

In this study "Judgement Sampling"(also known as purposeful sampling) method is used. This is the most common sampling technique. The researcher actively selects the most productive sample to answer the research question. This can involve developing a framework of the variables that might influence an individual's contribution and will be based on the researcher's practical knowledge of the research area, the available literature and evidence from the study itself. This is a more intellectual strategy than the simple demographic stratification of epidemiological studies, though age, gender and social class might be important variables (Marshal,1999).

We invited a non-random sample of 12 award winning schools teachers and 12 equivalent schools teacers in Antalya province. Technological leadership Questionaire was aplied to 700 teaches and 506 questionaire returned as filled. Six teachers who were actively worked in processes in QM system from award winning schools were interviewed.

Data Collecting Tools

Technological leadership Questionaire which is developed by "the Center for the Advanced Study of Technology Leadership in Education (CASTLE) used to develop, test, and validate the assessment instrument.." was used.

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Data Analysis

A total of 506 of the questionnaires were validated and evaluated. A total of six -dimensioned and a 32-itemed questionnaire was administered to these teachers. Data were analysed by SPSS program.

For the data collected via interviews is analised by coding. Coding is an interpretive technique that both organizes the data and provides a means to introduce the interpretations of it into certain quantitative methods. Each segment was labeled with a "code" When coding was completed, the report via a mix of: summarizing the prevalence of codes was written.

Results and Outcomes

In this section, the results of the statistical analyses carried out are presented. Firstly, after displaying the frequencies and percentages related to background of survey.

The first three sub-problem of the study quantitative research methods were applied. The data were provided by analysing 506 questionnaires from the scale by SPSS package programme. In the analysis of the data Independent samples "t" test aritmetic mean(X),standard deviation (sd) and One Way Anowa were used.

The research consists of a scale that was developed by validation and reliability confidence analyses and according to 5-point Likert scale. Five-point Likert item arithmetic average and means evaluate like this; X=100-179 : "Not at all" , X=1,80-2,59: "Minimally", X=2,60-3,39: "Somewhat", X=3,40-4,19: "Significantly", X=4,20-5,00 "Fully"

"**Technological leadership Skills**" scale consists of 30 items and six dimensions. The Cronbach Alpha values for these dimensions are respectively:

I. 8-item - "Leadership and Vision"	Cronbach alpha: .96
II. 7-item - "Social, Law and Ethic issues "	Cronbach alpha: .96
III. 4-item - "Efficiency and Proffecional Exercises "	Cronbach alpha:.91
IV. 5-item - "Measurement ve essessment "	Cronbach alpha: .95
V. 3-item - "Support, Management, & Operations"	Cronbach alpha: 93
VI. 3-item - "Learning and Instraction "	Cronbach alpha: 93

In this scale, items with factor load value bigger than .76 were evaluated. The KMO measure of sampling adequacy for this analysis was .97 The Bartlett test of sphericity was significant (P< .05). 83 % of the variance was accounted for by the factors.

4, 5, 6 sub-problem of the study qualitative research methods were applied. The qualitative data was gathered by interviews with 6 teacher who worked at award winning schools . Interview forms consisting of open ended questions were used in data gathering process. The data gathered by open ended questions provide the opportunity to see the explanations participants make, the meanings they attribute, and innovative ideas they may come up with. Content analysis was used in dealing with qualitative sub problems.

In order to get more comprehensive information, semi structured interview technique, which is one of the qualitative data collecting techniques, was used in the study. The main advantage of semi structured technique for the researcher is that it provides a more systematic and comparable information depending on it predisposed protocol. The teachers who worked at the school which taken quality award were interviewed by the researcher face to face and each interview lasted approximately 30 minutes.

Distribution of teachers' opinions which is about the level of technological leadership of school principals according to the dimensions ;

Table 1

Dimension ID	**Dimensions**	**Levels**		
		N	$\bar{x}$	SS
1	Leadership & Vision	506	3,78	0,94
2	Learning and Teaching	506	3,68	0,99
3	Productivity & Professional Practice	506	4,03	0,84
4	Support, Management, & Operations	506	3,68	0,98
5	Assessment & Evaluation	506	3,75	0,99
6	Social, Legal, & Ethical Issues	506	3,61	0,99
7	Total	506	3,75	0,88

Table 1 shows the Distribution of teachers' opinions which is about the level of technological leadership of school principals according to the dimensions . According to Table 1 observed that arithmetic averages ranged changed from 4.03 to 3.61. Accordingly , teachers thinks that the level of technological leadership of school principals quite enough. According to these results in terms of the technological leadership of school principals highest dimension "Productivity & Professional Practice" ($\bar{x}$=4,03); lowest dimension "Learning and Teaching" ($\bar{x}$=3,61).

Teachers ideas about the technological leadership of school principals,

a)T-test results for comparison at in terms of gender

Table 2

Dimensions	**Gender**	**N**	$\bar{x}$	**S**	**Sd**	**t**	**p**
1. Leadership & Vision	Kadın	307	3,80	0,95	504	0,87	0,39
	Erkek	199	3,73	0,94			
2. Social, Legal, & Ethical Issues	Kadın	307	3,69	1,02	504	0,37	0,71
	Erkek	199	3,66	0,94			
3. Productivity & Professional Practice	Kadın	307	4,05	0,87	504	0,57	0,57
	Erkek	199	4,00	0,78			
4. Assessment & Evaluation	Kadın	307	3,72	0,98	504	1,29	0,19
	Erkek	199	3,60	0,96			
5. Support, Management, & Operations	Kadın	307	3,80	0,98	504	1,38	0,16
	Erkek	199	3,67	1,02			
6. Learning and Teaching	Kadın	307	3,64	0,99	504	0,79	0,43
	Erkek	199	3,57	1,00			
7. Total	Kadın	307	3,78	0,89	504	0,90	0,37
	Erkek	199	3,71	0,86			

All sizes P> .0 5 so there is no significant difference between the opinions of men and women.

2- Teachers ideas about the technological leadership of school principals,

a) According to level of school they work, is there a significant difference? ANOVA results for comparison at in terms of level of school they work

Table 3

Dimensions	School Level	N	$\bar{x}$	S	sd	F	p	Fark
1. Leadership & Vision	(1) Ok.Öncesi	73	4,47	0,67	BG=22854	28,344	0,00	Scheffe
	(2).İlköğretim	237	3,77	0,89	WG=806			(1-2)
	(3).Lise	196	3,54	0,97				(1-3)
								(2-3)
2. Social, Legal, & Ethical Issues	(1) Ok.Öncesi	73	4,44	0,69	BG=26463	29,946	0,00	Scheffe
	(2).İlköğretim	237	3,64	0,94	WG=884			(1-2)
	(3).Lise	196	3,44	1,01				(1-3)
3. Productivity & Professional Practice	(1) Ok.Öncesi	73	4,57	0,56	BG=14,775	22,846	0,00	Scheffe
	(2).İlköğretim	237	4,04	0,81	WG=647			(1-2)
	(3).Lise	196	3,82	0,87				(1-3)
								(2-3)
4. Assessment & Evaluation	(1) Ok.Öncesi	73	4,45	0,68	BG=28,147	33,407	0,00	Scheffe
	(2).İlköğretim	237	3,65	0,91	WG=843			(1-2)
	(3).Lise	196	3,42	1,00				(1-3)
								(2-3)
5. Support, Management, & Operations	(1) Ok.Öncesi	73	4,43	0,69	BG=20299	22,333	0,00	Scheffe
	(2).İlköğretim	237	3,68	1,02	WG=909			(1-2)
	(3).Lise	196	3,57	0,95				(1-3)
6. Learning and Teaching	(1) Ok.Öncesi	73	4,27	0,79	BG=9769	21,613	0,00	Scheffe
	(2).İlköğretim	237	3,58	0,97	WG=915			(1-2)
	(3).Lise	196	3,41	0,98				(1-3)

According to teachers ,who work pre-school and primary school with pre-school and high school , opinion there is significant differences between the levels of school principals technological leadership in all dimensions. Also between elementary and secondary schools teachers opinions found significant difference in 1st, 3rd and 4th dimensions.

3- t-test results on the views of teachers who are working schools have won Quality Prices or schools have not won Quality Prices about the level of school principals technological leadership behavior.

Table 4

Dimensions	**Variables**	**N**	$\bar{x}$	**S**	**Sd**	**t**	**p**
1. Leadership & Vision	Ödül Almayan	258	3,35	0,91	504	11,58	0,00 P< ,05
	Ödül Alan	248	4,22	0,76			
2. Social, Legal, & Ethical Issues	Ödül Almayan	258	3,2,	0,94	504	12,77	0,00 P< ,05
	Ödül Alan	248	4,18	0,77			
3. Productivity & Professional Practice	Ödül Almayan	258	3.73	0,84	504	8,83	0,00 P< ,05
	Ödül Alan	248	4,34	0,70			
4. Assessment & Evaluation	Ödül Almayan	258	3,19	0,92	504	13,16	0,00 P< ,05
	ÖdülAlan	248	4,18	0,75			
5. Support, Management, & Operations	Ödül Almayan	258	3,32	1,00	504	11,11	0,00 P< ,05
	Ödül Alan	248	4,20	0,75			
6. Learning and Teaching	Ödül Almayan	258	3,16	0,94	504	12,01	0,00 P< ,05
	Ödül Alan	248	4,10	0,80			
7. Total	Ödül Almayan	258	3,32	0,81	504	13,07	0,00 P< ,05
	Ödül Alan	248	4,21	0,70			

There was significant difference in all dimensions between the views of teachers who are working schools have won Quality Prices or schools have not won Quality Prices about the level of school principals technological leadership behavior. Accordingly teachers who are working the schools have taken the quality award , the level of technological leadership of school principals perceived higher levels than the teachers who are working schools have not won Quality Prices . Thus, according to the views of teachers, heads of schools have taken the quality award is superior to others in terms of technological leadership.

4- According to teachers, importance of the school principal technological leadership behavior in terms of quality school . According to teachers, How important is the school principal technological leadership behavior in terms of quality school?

Table 5

Order no	Code	Teacher	f
1	Very important	5	5
2	İmportant	1	1
3	Less important	0	0
4	Unimportant	0	0

Table 7 given findings about the importance of technological leadership for the research participants. Study focused on four code. Accordingly all of the participants believes that technological leadership, "important" (20%) or "very important" (80%). this result shows that the principal priority in the behavior of technological leadership. some of the teachers' opinions about the importance of technological leadership are as follows.

QST 6 : “I think it is very important. A school leader have a responsibility to be an example and model. İf you haven’t got enought ability to use technology You can not expect to do this skill from the others. ”

QST 6 : “if the school principal uses technology good level and encourage us to use technology for educational purposes , our work becomes easier. And that affects the school quality level absolutely. Therefore the principal's leadership behavior is essential and it is important for quality school.”

QST 6 :” I think within an organization all leaders must have the highest level ability to use of teknology. İf they haven’t got they need to be educated about it. ”

5. According to teachers, How does the school principal's technological leadership behavior affect the quality of education

Table 6

Order no	Code	Teacher	f
1	increasing satisfaction	6	1
2	diversifies learning with using technology	6	2
3	diversify the channels of communication	6	2
4	ensures the development of teachers'.	6	4
5	technology designs based on the needs and purpos	6	1
6	using technology to provide fast feedback	6	3
7	Retention of learning with using technology	6	2

Table 8 given findings about How does the school principal's technological leadership behavior affect the quality of education for the research participants. Study focused on seven code. Accordingly participants participate in the use of technology and it shows that they care. In this respect, they stated that several studies have been done to improve the quality of education within the institution.

QST5:" technological possibilities and educational technology provided by school principal at school are presented to us alternatives. so that each teacher can choose the method that suits yourself. So that they do their job more beautiful , more easier and more truth . this helps to increase the quality of at school."

QST 6 : "we have laptops and projections , so we can do our activities with that Technologies. for example , at the same time telling a story book, story book reflect the projection. Thus we are attracted the attention of all the students at the same time. This makes learning easier and we provide the learning together. this also increasing quality at school"

QST 5: "school principals able to the use technology to create effective policies and plans for take back fast feedback. Also school principals are able to encourage teachers for using technology. For example after an activities we take off the statistical charts about done. After that all teachers see them. They are very surprised."

6. According to teachers, what makes the school principal as a leader in technological in order to improve the quality ?

Table 7

Order No	Code	Teacher	f
1	Use the technology.	6	6
2	Supports the staff	6	6
3	training plans according to individual needs	6	3
4	increase the participation of stakeholders in the education process of education	6	3
5	measure the use of technology with some softwares	6	1
6	apply surveys	6	6
7	plans performance indicators, assess the situation with statistical data	6	2
8	complements the technological deficiencies	6	3
9	transforming their work to the chart for embodies	6	3
10	satisfactions can be taken a very short time	6	4
11	Offer alternatives to the use of technology	6	2
12	Surveys about participation in parent-teacher evaluate and meetings satisfaction increases	6	1

Table 7 given findings about what makes the school principal in order to improve the quality as a leader in technological . At the end of evaluation , we found the school principals has been demonstrated technological leadership behavior in order to increase the quality of education. According to our teachers our principals exhibit highlighting and sympathetic attitude about using technology. At the end we saw that the effectiveness measurement have been enought at our educational system, but there have not been adequate measurement of efficiency..

QST 6 : “Managers are aware of the importance of the use of technology in education so they tend to use technology. For this they care about to equip school with technology. They are using technology and encourage us to use. ”

QST 5 : “school administration provides us technological possibilities and educational technology. This creates alternatives for us. ”

QST 5 : “the satisfactions can be measured a very short time with using technology. ”

Conclusions and Recommendations

1- According to the various dimensions of teachers 'views on school principals' technological leadership, has been "quite" positive observed.

According to teachers 'views in terms of the technological leadership of school principals highest dimension “Productivity & Professional Practice” and lowest dimension “Learning and Teaching”

2- According to the levels of school , principals are significant differences between the levels of technological leadership. While Pre-school principals 'technological leadership is the highest level, high school principals' technological leadership is the lowest level.

3-All dimensions and than of average of the survey , we found significant differences between the school principles levels of technological leadership in schools which have won Quality Prices and which have not. Accordingly, school principals who have taken the quality award, technological leadership level is high, Than School principals have not received the quality award.

İn general While school principals who have not received the quality award , technological leadership level is medium. school principals who have taken the quality award technological leadership level rather high.

4- İnterviewed school teachers who have taken the quality award thinks that the principals technological leadership level is very important or important for increasing the quality of the school.

5- School principals using technology , by encouraging teachers to use , developing teachers skills in the field of technology , providing alternatives for teachers to use lessons , helps to improve quality in the field of education and management .

6- Complementing technological deficiencies, evaluating the satisfaction surveys with computer, making presentations with graphics, provides technological support to teachers, introduce and implementing new programs, organizing training programs for teachers, offers alternative and new Technologies to teachers, building websites at school, checking the work

of teachers using electronic networks, with using technology ensuring satisfaction and benefit parent participation in meetings,

7- Increase the quality of education and administration in schools, and to ensure the effective functioning primarily as a school principals and other leaders must be training technological leaders

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