

SCHOOL MANAGEMENT INFORMATION SYSTEMS IN PRIMARY SCHOOLS

Kamile DEMİR
kamiledemir@trakya.edu.tr

ABSTRACT

Developments in information technologies have been impacting upon educational organizations. Principals have been using management information systems to improve the efficiency of administrative services. The aim of this research is to explore principals' perceptions about management information systems and how school management information systems are used in primary schools. The respondents of this study were 98 elementary school principals in Edirne. Data were gathered using a five-part questionnaire. The first part collected demographic information about respondents. The others had statements about school management information systems. The data were analyzed using frequency, percentage, mean and standard deviation. Results indicated that although technologic infrastructures of elementary schools are insufficient, school management information systems have an important contribution to school management.

KEYWORDS: school management information system, elementary school, principal

İLKÖĞRETİM OKULLARINDA OKUL YÖNETİMİ BİLGİ SİSTEMLERİ

ÖZET

Bilgi teknolojilerindeki gelişmeler eğitim örgütlerini etkilemektedir. Okul yöneticileri yönetim bilgi sistemlerini yönetsel hizmetlerin etkililiğini artırmak amacıyla kullanmaktadır. Bu çalışmanın amacı ilköğretim okullarında okul yönetimi bilgi sistemlerinin kullanımı ve okul yöneticilerinin yönetim bilgi sistemlerine ilişkin görüşlerini saptamaktır. Araştırmanın katılımcıları 98 Edirne ili ilköğretim okulunun yöneticisinden oluşmaktadır. Veri toplama aracı olarak beş bölümden oluşan bir anket geliştirilmiştir. Birinci bölüm ile katılımcılara ilişkin kişisel bilgiler elde edilmiştir. Diğer bölümler okul yönetimi bilgi sistemleri ile ilgili sorulardan oluşmaktadır. Elde edilen veriler frekans, yüzde, aritmetik ortalama ve standart sapmaları hesaplanarak çözümlenmiştir. Araştırmanın sonucunda ilköğretim okullarında teknolojik altyapının henüz yetersiz olmasına karşın, okul yönetimi bilgi sistemlerinin yöneticilere okul yönetimi konusunda önemli katkılar sağladığı saptanmıştır.

ANAHTAR KELİMELEER:Okul Yönetimi Bilgi Sistemleri, İlköğretim Okulu, Okul Yöneticisi

INTRODUCTION

Today, which we call information age as many technologic developments have been experienced; the biggest risk that an organization could take is to stay insensitive to change. Many significant factors such as continuous developments in information technologies, information exchange, increasing expectations of the society, modern managing perceptions and applications cause organizations all over the world to develop new applications in order to survive (Demir, 2003). Because of their priority in modern societies, Information Technologies have reached a state of high priority in education, too. Recently, contributions of information technologies to education have been among the mostly emphasized subjects (Webber, 2003; Flanagan&Jacopsen, 2003; Selwood, 2000, Pelgrum, 2001; Yuen, Law&Wong, 2003). Every country aims to provide their citizens with the most contemporary education in line with their financial efficiency. For this reason, big investment plans about the use of information systems have been put into action all over the world (Yuen, Law&Wong, 2003; Pelgrum, 2001). In our country, too, in order to support Primary Education Program, 600 million \$ of loan in total was taken out in World Bank on June 25, 1998 and July 26, 2004. In the first section of the program, at least two primary schools in each of the 921 countries of Turkey were equipped in terms of information technologies and then activated. In-service training courses about the use of computer in primary education which was given to 2.250 coordinators of information technology sections and 35.000 teachers were financed. In the second section of the project ending on February 28, 2006, it is expected that information technology software are distributed to the 3.000 primary education schools around Turkey and education portal is established. By training 600 computer teachers, in-service training is planned for all the primary school inspectors working on the field, and for at least 106.381 educators formed of managers and teachers of primary schools which have or will have information technology classes, on use of information technologies in education and use of educational software, which will be prepared in line with recent instruction programs (World Bank, 2002; MEB, 2002).

School Management Information Systems

Being at the beginning stage of the School Management Information Systems, computerization of the school management is the basic subject of today's school management. Principals have started to make use of information systems in the gradually-increasing daily management staffs (May, 2003). Generally speaking, the

reasons to use information systems can be stated as increasing effectiveness at work by processing information, increasing managerial effectiveness by meeting the need for information and gaining superiority in competitions by directing strategies (Yuen, Law&Wong, 2003). School management information systems aim to provide support for the managing and educational activities of the school managers by processing information. Telem (1999) defines school management information systems as “a management information system designed to match the structure, management task, instructional processes and special needs of the school”. As for a broad definition, contributions of the information systems to schools can be defined as making programs more effective, making the teaching process and the changes in learning environment professional, enabling teachers to exchange their experiences in a more systematic way, working in teams, determining the needs of the students (Gurr, 2000; Pegler, 1992), supporting the school managers and other staff in doing their duties, developing their performances, effectiveness and efficiencies (Telem&Buvitski, 1995). In other words, school management information systems increase effectiveness and efficiency by saving time and facilitating development of alternative solutions for sophisticated problems (Vissher&Wild, 1997; Pegler, 1992).

Information systems support not only information process but also innovations (Haag, Cummings&Dawkings, 1998; Bellum, 2003). As being adaptable to changes, these systems are helpful to cope with the demands for change. Therefore, school management information systems improve the adaptation of the school to the environment. They enable the school to comprehend and define inner and outer information transfer. Thereby, school management both meets the demands and expectations of its inner (teacher, student) and outer members; and ensures that school activities are arranged accurately and on time (Pegler, 1992).

Introduction of school management information systems to schools have caused significant changes in roles and working styles of managers (Telem, 1999). School management information systems have changed school management in the areas of leadership, decision making, workload, human resource management, communication, responsibility and planning (Gurr, 2000). Strategically school management information systems help the manager in determining the aims of the school, making long term plans, distributing resources, and forming educational methods of future, determining performances of teachers and success of the school (Telem&Buvitski, 1995; Telem, 1991). In this way, school management information systems can also be used as a tool to initiate and use educational leadership of the manager (Telem, 1999).

School managers can make more efficient decisions when they get correct and up-to-date information by school management information systems (Christopher, 2003). Decision making is the heart of educational management. Daily, problematic conditions that require decision making are based on the complicated and unexpected nature of school environment. For this reason, as a problem solver, the educational manager has to gather and analyze information continuously (Perez&Uline, 2003). In addition, managers have been required to make more decisions in short times because of the increasing expectations from the educational system (Christopher, 2003). Moreover, decision making has been faster, more frequent and more complicated in schools of today. In order to make decisions under these conditions, gathering data that is continuous, up-to-date and that can be accessed on-time and analyzing and using this data is an obligation (Telem, 1991; Gentry, 2005). Success of school development studies are mostly based on data based decision making. However school managers are not able to use the data efficiently in this aspect (Gentry, 2005).

School management information systems provide information and various reports from the database in order to make decisions in line with the aims of the school and facilitate controlling of the activities to achieve the aims (Telem&Buvitski, 1995; Telem, 1991; Christopher, 2003). Information technology helps the manager to access, manage and report the information quickly and easily. While telecommunication nets provide the manager with wide resources of information that can be used in problem solving, written communication has been grown richer by means of word processors and e-mails (Perez&Uline, 2003).

As we can see information systems have changed the roles of school managers (Pegler, 1992) and have changed their methods of working (Christopher, 2003). One of these is to develop a database that includes information on student registration and family, discontinuity, grades, staff and classes, and course information. These are just a step of school information systems. Other parts of information systems are management of school library, finance, fixtures, school schedule planning, standard reports sent to higher levels of school administration, etc. These are simple data processing activities that increase efficiency of school management (Pegler, 1992). Moreover, use and analysis of information at schools will not only make managers realize what should be done in order to develop student performances, but also will ensure success in accomplishing these changes. When managers use data, they will start to realize innovation efforts on this issue (Christopher, 2003). As a result, it can be stated that by means of information systems school managers will be able to determine required

information, access the information, interpret the data, use the data in decision making and evaluating and developing efficient use of the system.

Researches in various countries confirm that school management information systems increase organizational and managerial effectiveness. After studies done with American school managers, Hedberg, Harper, Bloch and College (1992) stated that efficiency has increased in decision making at schools where school management information systems are used. In his study where Gurr (2000) examined effects of school management information systems on working of primary school managers in Australia, managers stated that use of school management information systems has introduced them information technologies and the facilities, lessened their workload and made management process more efficient, helped them use time more efficiently, made teachers feel themselves more important, made them and the teachers wish to improve themselves more, made important changes in education and teaching, and increased the quality of in-school communication. In their study with school managers, Telem and Buvitski (1995) found that school managers believed that school management information systems lead to important changes at school. According to school managers, this application has increased school standards, helped decisions on the level of control and strategy, increased the quality of teaching programs, facilitated student-teacher interaction, increased the coordination between teachers, facilitated systematic and continuous information transfer to parents, and increased communication with other institutions and the central organization. In his study where Gurr (2000) examined effects of information systems on school managers of local schools, he determined that information systems have largely changed roles of school managers. Managers stated that a manager who does not use the information systems is not able to achieve his duties sufficiently anymore. Lastly, Anderson and Dexter (2005) in their studies determined that technology leadership of school managers is more important than background in the efficient use of technology at schools.

However in literature there are researches that show that school managers had problems in using school management information systems. For example Visscher and Bloemen (1999) in their study with 195 managers and teachers working in 63 high schools in Holland found out that school management information systems were mostly used in routine works and managers and teachers did not have sufficient education on the system. Managers and teachers indicated that while school management information systems had positive effects on evaluation of efficiency of the school, development of using sources, quality of educational programming and in-school communication, it increased their workload and caused stress. The research indicated that this stress is reduced in schools where education is sufficiently given on the system and where innovation is clearly stated as a vision. In addition it was found that the staff that used the system had higher motivation, was keen to take more education, and adopted the vision of the school more. In the research where Warren (1998) examined the effects of information systems on educational decision making, he found out that school managers have not taken sufficient education on efficient use of the information technologies. Crouse (1994) found that education increased the possibility to use the information systems. Also Jacobs (1992) claimed that there was a correlation between the amount of education the managers took, and the use of information technologies. As a result, it can be stated that school managers had to take over the responsibility of leadership in an unfamiliar area without sufficient education.

As we can see communication and information technologies have increasingly had a role on the activities of schools. During this period, many things have been said and written about the importance of computers (Selwood, 2000; Christopher, 2003). Although there are many researches on the role and necessity of information technologies in education, many of these are about the educational functions of information systems and just a few of them are about school management. In other words, although there are many researches on the role of information systems on class and teaching, few studies have been done on the use of them in educational management and their effects on the managers. The aim of this study is to examine the use of information systems in school management and to find out ideas of managers about managerial information systems. In this aspect, these questions were searched:

1. How are the information technology facilities in primary schools in Edirne?
2. What are the studies done by using managerial information systems in primary schools in Edirne?
3. What are the contributions of managerial information systems and the problems in primary schools in Edirne?

METHOD

Research Model

The model of this research, which aims to examine the use of information systems in school management and to find out ideas of managers about managerial information systems, is survey model.

Population

Population of this research is formed of school managers working in 170 primary schools in Edirne. However managers from 98 schools responded to questionnaires. Among the school managers included in the research, 26 of them have worked for 1-5 years (26.5%), 25 of them for 6-10 (25.5%), 18 of them for 11-15 (18.4%), 9 of them for 16-20 (9.2%), and 14 of them have worked for 21 and more years (14.3%). 25 of the participants (25.5%) are undergraduate, 69 (25.5%) of them are graduate and just one of them (25.5%) is a post-graduate. Among the school managers included in the research, six of them didn't respond to question about occupational experience and three of them didn't respond to question about education level.

Data Collection and Analysis

A questionnaire was developed as an instrument of data collection. In the first part of the questionnaire, there were some items about the personal information of the school managers such as vocational experience and education level. In the second part, the items were about information technology facilities related to the information systems of the school and opinions of the school managers about technological facilities. The items about the number of the computers in the school and number of the computers connected to the Internet were open-ended and later, they were classified after examining their distributions. Participants were expected to choose among the options presented for the items about the places of the computers and the ones connected to the Internet and also the softwares used. Lastly, there were open-ended items related to the places to consult in case of a problem about the program and the ones related to reliability. In the third part of the survey, there were items related to the studies done with the school managing information systems and items about by whom these studies were done. These items were divided into two parts as the preparation of various documents, lists and statistics, and data entry. The fourth part consisted of the contributions of managing information systems to school management and problems encountered. These items were in the form of five point likert scale. Options were ordered as; "Strongly disagree", "Disagree", "Undecided", "Agree" and "Strongly Agree". The answers were ordered from "Strongly Disagree" to "Strongly Agree" by grading them from 1 to 5. The fifth part included experiences of school managers in information systems and effects of managing information systems to the manager. In this part, school managers were asked questions about their experiences in information systems and the effects of managing information systems to their managerial efficiencies and occupational developments. Options were ordered as; "Strongly disagree", "Disagree", "Undecided", "Agree" and "Strongly Agree". The answers were ordered from "Strongly Disagree" to "Strongly Agree" by grading them from 1 to 5. In this part, To determine the validity of questionnaire was used the technique of content-related validity according to the opinions of the experts,

At the end of the study, the data were analyzed by evaluating their arithmetic average, standard deviation and frequencies and percentages.

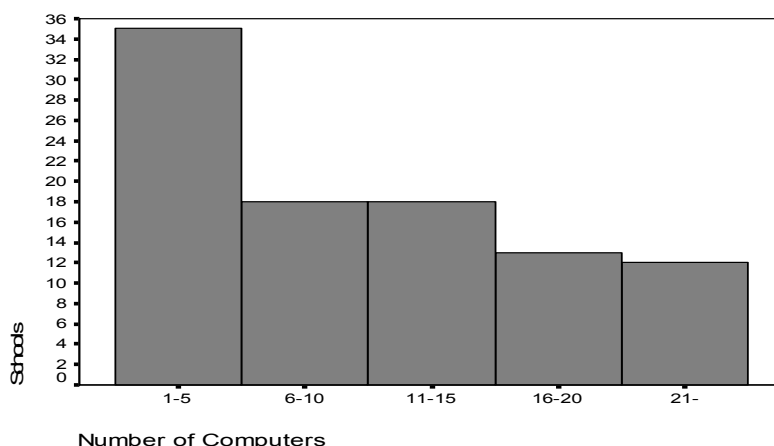
FINDINGS

The findings of the study were presented under the titles of information technology facilities of schools, studies done with the managing information systems in schools, contributions of managing information systems to school management, and the problems suffered, information system experiences of school managers and effects of information systems to them.

Facilities of Information Technology in Schools

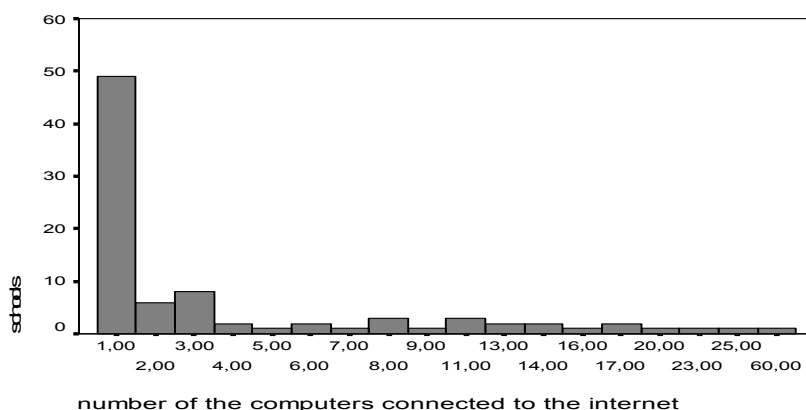
Under this title, facilities of information technology in schools and opinions of school managers about technological facilities were presented. The number of the computers, and computers connected to the internet, their location and software used in schools and opinions of school managers about the software were presented below in graphics and tables.

Graphic 1. Number of Computers in Schools



When the number of the computers in schools within the scope of the study was examined, it was found that 35 (%35.7) out of 96 schools had 1-5 computers, 18 (%18.4) schools had 6-10, 13 schools (%13.3) had 16-20 and 12 schools (%12.2) had 21 and more computers. As it is seen in Graphic 1, %54 of the schools within the scope of the study had less than 10 computers.

Graphic 2. Number of Computers Connected to the Internet in Schools



As it is seen in graphic 2, the number of the computers connected to the internet was considerably poor. In addition, only %27.6 of these schools had a web page.

Table 1. Locations of Computers and the Computers Connected to the Internet in Schools

Location	Computer		Internet	
	f	%	f	%
Room of the Manager	85	86.7	70	71.4
Deputy Manager Rooms	74	75.5	51	52
Teacher's Room	56	57.1	34	34.7
Computer Laboratory for the Students	62	63.3	33	33.7
Guidance service	15	15.3	12	12.2
Library	15	15.3	6	6.1

85 (%86.7) managers out of 98 that were included in the study had a computer in their rooms and 70 (%71.4) of them had internet connections. Deputy Managers rooms with 74 (%75.5) came after that. Only 51 (%52) of computers had internet connection in deputy manager rooms. 56 teachers room (%57.1) had computers and 34 of them were connected to internet (%34.7) in 98 schools. On the other hand, only 15 (%15.3) of the libraries and guidance services had computers. (Table 1)

Table 2. Software Used in Schools.

SOFTWARE			
		N	Y
School Management Software Package	f	45	50
	%	45.9	51.0
Budget Programs	f	47	48
	%	48.0	49.0
Word Processor (Microsoft Office-Word vb.)	f	15	81
	%	15.3	82.7
Spreadsheet (Microsoft Office-Excel)	f	17	79
	%	17.3	80.6
Presentation (Microsoft Office-Power Point vb.)	f	30	66
	%	30.6	67.3
İlşis Software	f	41	55
	%	41.8	56.1
Library Program	f	90	5
	%	91.8	5.1

As it is observed in Table 2, the most used softwares by the school managers in the schools were word processing (%82.7) and spreadsheet (%80.6) softwares. In %51 of all the schools, school management softwares were prepared by private companies. The least used software was the library program (%5.1).

Table 3. Ideas of School Managers about the Programs Used

IDEAS ABOUT THE PROGRAM			
		N	Y
Do you find the programs useful?	f	6	90
	%	6.1	91.8
Do you think you use these programs with all their functions?	f	58	38
	%	59.2	38.8
Do you pay attention to computers being ready to use all the time?	f	6	92
	%	6.1	93.9
Can you get help easily when you come across a problem with the programs?	f	41	54
	%	41.8	55.1

%91.8 of all the school managers who took part in the research found the programs they used user-friendly in school management. However, % 38 of them thought that they used these programs with all the functions. Besides, %93.3 of the school managers stated that they paid attention to the computers' being ready to use all the time and only %55.1 of them said that they could get help easily when they came across a problem. (Table 3)

Table 4. Agencies where Schools Get Help in Case of a Problem

GETTING HELP	f	%
We don't get help	11	11.2
Server	46	46.9
Surrounding	22	22.4
Teacher of Computer	14	14.3
On-line Help	5	5.1

As it is seen in Table 4, % 46.9 of school managers got help from the server when they had a problem related to the programs at school.

While %76.5 of the school managers said "Yes" to the question "Do you take precautions for the safety of the information in the computer?" %21.4 of them said "No". The precautions taken for the safety of the information in the computers by the school managers were given in Table 5.

Table 5. Precautions Taken for the Safety of the Information

PRECAUTIONS		N	Y
Anti-virus programs	f	70	28
	%	71.4	28.6
Password	f	71	27
	%	72.4	27.6
Back up	f	63	35
	%	64.3	35.7

While % 75.5 of the schools which took part in the research took precautions, %25.5 of them did not take any precautions. For the safety of the programs, in %28.6 of the schools anti-virus programs, in % 27.6 of the schools cipher and in %35.7 backing up were used (Table 5).

DATA		Data Entry	Not-Available	School Principal	Assist. School Principal	Official	Teacher
Information about	f	7		52	55	1	8
Students	%	7.1		53.1	56.1	1	8.2
Student Grades	f	15		29	54	1	26
	%	15.3		29.6	55.1	1	26.5
Attendances	f	16		26	58	2	2
	%	16.3		26.5	59.2	2	2
Institutional	f	6		69	38	4	4
Information	%	6.1		70.4	38.8	4.1	4.1
Information about the	f	10		51	40	9	4
teachers	%	10.2		52	40.8	9.2	4.1
Curriculum and	f	19		34	47	3	13
Courses	%	19.4		34.7	48	3.1	13.3
Budget	f	37		29	14	13	4
	%	37.8		29.6	21	14	4.1
Salary-Payroll	f	32		26	25	21	3
	%	32.7		26.5	25.5	21.4	3.1
Accrument Data	f	38		26	22	17	2
	%	38.8		26.5	22.4	17.3	2
Fixtures	f	25		39	35	12	3
	%	25.5		39.8	35.7	12.2	3.1
Library	f	41		17	23	12	21
	%	41.8		17.3	23.5	12.2	21.4

As it is shown in Table 6, the most intensive data entries into the information systems at schools were respectively as follows: institutional information, information about students, student grades and attendances. The least data access was seen in libraries of schools. When it was examined who entered the data at schools, it was clear that the most important part of this work was done by the school principals and their assistants. The school principal usually entered the data about institutional information (%70.4), information about the teachers (%52), fixtures (%39, budget (%29.6), payroll (%26.5) and accrument (%26.5); and assistant principals entered the data about attendances (%59.2), information about the students (%56.1), grades(%55.1), curriculum and courses (%48) and library (% 12.2) at schools within the scope of this research. As it is obvious, the role of the teachers in entering data was very scarce. Only in 26 of 98 schools, teachers were assigned to enter the student grades into the system, of 13 schools (%13.3) they were assigned to enter the curriculum and the courses and of 22 schools (%21.4) the library data.

Table 7. Preparation of Lists and Documents through Information Systems at Schools

Preparation of Lists & Documents		No Data Entry	School Director	Assistant School Principal	Official	Teacher
Students	f	4	43		54	5
	%	4.1	43.9		55.1	5.1
Teachers	f	6	57		46	10
	%	6.1	58.2		46.9	10.2
Fixtures	f	18	41		34	12
	%	18.4	41.8		34.7	12.2

School	f	30	40	28	14	2
Expenditures	%	30.6	40.8	28.6	14.3	2
Payroll	f	27	30	30	19	5
Arrangement	%	27.6	30.6	30.6	19.4	5.1
Student Statistics	f	7	40	52	3	12
	%	7.1	40.8	53.1	3.1	12.2
Library Statistics	f	42	17	18	12	19
	%	42.9	17.3	18.4	12.2	19.4

As it is observed in Table 7, the lists and documents prepared by information systems at schools within the scope of this study were the lists and documents related to the students and the teachers and statistics related to the students respectively. Information systems were used relatively lesser in the preparation of library statistics at schools. When the people who were responsible for the preparation of the lists and the documents were analyzed, it was observed that this responsibility was carried out mostly by school principals and assistant school principals. Through the information systems at schools in the scope of this study, mostly school principals prepared the lists and documents related to the teachers (%58.2), fixtures (%41.8), school expenditures (%40.8) and payroll (%30.6); and assistant school principals prepared the lists and documents and (%55.1) statistics (%53.1) related to the students. As it is clear, teachers got the least part in preparation of the lists and documents. Only in 11 schools (%11.2) of 98 schools, teachers were assigned to enter data and documents about the students and in 12 schools (%12.2) student statistics and in 19 schools (%19.4) library statistics.

The contribution of Management Information Systems to School Management and the Problems Encountered

The contribution of Management Information Systems to School Management was given in Table 8 and the problems encountered were given in Table 9 below.

Table 8. The contributions of Information Systems to School Management

CONTRIBUTIONS	N	\bar{X}	SS
Preparation of documents became easier	97	4.43	.72
Keeping the records became easier	97	4.40	.73
Correspondence became easier	97	4.39	.72
Many more operations can be done compared to the past times	97	4.38	.77
It is easier to correct the mistakes	96	4.34	.58
The information asked by the upper institutions can be transmitted in a short time.	98	4.33	.88
The frequency of mistakes is nearly zero.	98	4.32	.86
It is easy to detect the mistakes	96	4.32	.88
Information related to the students can be transmitted to the parents easily.	96	4.04	.92

It can be observed that the level of the contribution of information systems to school management was at a high level. It was stated that the most important contribution of information systems to school management was that preparation of document got easier (\bar{X} =4.43). This was followed by the ease of keeping the records(\bar{X} =4.40), the ease of correspondence(\bar{X} =4.39), more operations' being done compared to the past (\bar{X} =4.38), the ease of correction of the mistakes(\bar{X} =4.34), the ease of the information asked by the upper institutions' being transmitted in a short time (\bar{X} =4.33), the frequency of mistakes' being least (\bar{X} =4.32), the ease of detecting the mistakes (\bar{X} =4.32), the ease of the information related to the students being transmitted to the parents easily (\bar{X} =4.04) (Table 8)

Table 9. Problems Encountered Related to Management Information Systems

PROBLEMS	N	\bar{X}	SS
We have to give a break in case of an electricity cut.	93	3.66	1.23
The risk of data's being lost increased (electricity cut, system collapse)	97	2.93	1.24
We have some problems related to the softwares.	95	2.87	1.13
It is a serious time consumer to check e-mails all the time.	97	2.24	1.01
We cannot do the necessary work when the responsible people are out of the school.	92	2.15	.81
We had enough time to prepare the studies required by the upper institutions(to enter	96	1.97	.88

the personal information to the system, etc)

We cannot update the data that we entered to the computer or to the Internet 96 1.89 .77 regularly.

As it is seen in Table 9, school managers stated that the fact that they had to pause the work in the case of electricity cut off ($\bar{X}=3.66$) was the most frequent problem about the information systems and while the fact that they could not update the data regularly ($\bar{X}=1.89$) was the least frequent one.

Information System Experiences Of School Managers and Their Effect to the Managers

Under this title information system experiences of the school managers and effects of management information systems to the managers were presented. Here are the findings about school managers' experiences and frequencies of computer and the Internet use and the education they received about these subjects, which were the indicators of school managers' information system experiences: the level of computer use of the %32.7 of the school managers was basic level, %54.1 of them was average and %12.4 of them was advanced. Managers stated that their frequencies of computer use ($\bar{X}=3.58$) and internet use ($\bar{X}=3.22$) were at a medium level. %81.6 of the school managers received education about working with computers. On the other hand, %77.6 of them answered the question "Would you like to receive education about computers?" as "yes". Findings about the effects of management information systems to the managerial effectiveness of the school managers were presented in Table 10 and findings about their effects to the managers' vocational development were presented in Table 11.

Table 10. The effects of Information Systems to the Managerial Effectiveness of the School Managers

Effects To The Managerial Effectiveness Of The School Managers	N	\bar{X}	SS
It makes it easy for me to reach the information I need to solve the problems	98	4.40	.60
The data that are input in the computer are effective in making managerial decisions	96	4.14	.80
I can make use of time more effectively	97	3.54	.89
My workload has reduced.	98	3.53	1.32
My responsibilities have reduced	98	2.17	1.11

As it is seen in Table 10, school managers relatively stated that the most important effect of the information systems to their managerial effectiveness was that they made it easy for them to reach the information they needed, to solve the problems ($\bar{X}=4.40$) and that the data that were input in the computer were effective in making their managerial decisions ($\bar{X}=4.14$). The least important relative effect of the information systems to school managers' managerial effectiveness was that they reduced the workload ($\bar{X}=3.53$) and the responsibilities ($\bar{X}=2.17$) of the managers.

Table 11 The Contribution of Information Systems to the Professional Development of the School Manager

Contributions to the Professional Development of the School Manager	N	\bar{X}	SS
This improved my desire to develop myself.	97	4.45	.72
This changed my perspective of the technology.	97	4.34	.83
These studies improved the quality of my work.	96	4.23	.76
Working with a computer encourages me about finding alternatives in solving the problems.	98	4.23	.70
Working with a computer improved my skill of solving the problems.	97	4.13	.84

As it can be seen in Table 11, school managers considered the contributions of information systems to their professional developments very important in all items. The most important contribution of Information Systems to professional developments was stated as the desire of developing himself ($\bar{X}=4.45$). This was followed as the change of perspective of the technology ($\bar{X}=4.34$), improvement of the quality of the works ($\bar{X}=4.23$), encouragement of finding alternatives in solving the problems ($\bar{X}=4.23$), improvement of problem solving skill ($\bar{X}=4.13$)

DISCUSSION

According to the results of this study which was about the usage of School Management Information Systems in primary schools and which intend to determine the viewpoints of the school managers related to management information systems, it was observed that the number of computers was not enough and there was only one computer connected to Internet in most of the schools. Besides, in few of these schools, there was a web page of the school.

In the study conducted by Pelgrum (2001) in 26 countries and by Mentz and Mentz(2003) in the schools of South Africa, it was seen that one of the most important obstacles of the applications of management information systems was the inadequacy of the numbers of the computers. For that reason, it can be said that there was an important infrastructure problem of the realization of school management's information systems in today's schools. As Gregorash stated (2004) the consistency with technological improvements increased with the usage of technology. For that reason, it is compulsory to supply educators especially school managers with enough technological opportunities to make them accept and harmonize the improvements. The problems encountered show the necessity that the applications of information system should be done in the scope of an effective program.

Furthermore, there is an important difference among the schools in terms of having these technologies. This imbalance makes us think that there are some inequalities related to the usage of these technologies' opportunities not only for the manager and teachers but also for the students. This situation shows that there is a possibility of coming face to face with the problem which is discussed widely and called "digital division" not only country-wide but also in the schools in the same province.

Moreover, it was observed that there are still some school managers and assistant school managers who don't have a computer in their rooms at the schools in the scope of this study. Among the school managers and assistant school managers who have a computer in their rooms, some of them use a computer without an Internet access. Besides there are some schools whose teachers do not have the opportunity of making use of the information technologies. It is seen that The Ministry of Education's objective (MEB, 2002) which is supplying each staffroom with at least two computers; supplying guidance service, library, school managers with Internet access in order to communicate with the central and provincial offices and also for the usage of management has not been achieved yet.

As it was stated before, instrument insufficiency in technology is a serious handicap for managers and teachers in using information technologies in their studies and for expectations such as being a literate of information and leader of technology to become real.

While school managers defined their frequencies of internet and computer use as medium level, they described their level of computer use as inefficient. In the study of Peterson (2000) and Jetton (1997), managers found their efficiency in using computer low. When examined in terms of the programs used, it is seen that software which managers used most are Word Processor and Spreadsheet. In their studies about school managers, Gurr (2000), Peterson (2000), Blake (2000), Borruso (2000) and May (2003) stated that managers used word processor software more often than graphic and database software. In addition, apart from these softwares, managers participating in this study have been using school managing software prepared by private companies. As it is seen, the Ministry of National Education could not achieve its aim of buying the softwares such as those which keep records of the students for the school management, management information system and decision making system software, database software for the school guidance services, library automation software for the libraries, accounting software for the school accountings; and putting them into use of the schools (MEB, 2002). Therefore schools try to obtain these softwares by their own efforts.

Majority of the managers involved in the study found the software they used in the school management practical. However, very few of them thought that they used all functions of these softwares. This may result from the fact that managers have insufficient education about the managerial software. The Ministry of National Education attaches more importance to teacher training in technology training during the studies of in-service training. Training of the managers is a serious problem even in the other countries which practice the applications of managerial information systems in their schools. For example, in his study involving schools of 26 countries, Pelgrum (2001) showed that having insufficient education is among the most important hurdles of managerial information system applications according to the school managers. Likewise, Jetton (1997) in his study involving school managers from Texas, Allen (2003) in his study involving managers from Ohio, Dowson (2001) in his study involving managers from Louisiana, Goeltz (1998) in his study involving managers from Idaho, Borruso (2000) in his study involving managers from New York showed that, according to the managers, inefficiency in the use of technology resulted from the insufficient education they received.

As it was also highlighted by Anderson and Dexter (2005), being a leader in technology, school manager should learn how to use technology while fulfilling his duties because a school manager is a key to increase the use of technology in schools. Therefore, managers' education in the use of technology is as indispensable as those of teachers. It is arduous to back up further innovations in an area about which you have a little knowledge. When it comes to an innovation involving technology, leadership is a crucial factor. No matter how much teachers are educated in technology, it would be impossible to put them into practice without the leadership of the education manager. (Dawson&Rakes, 2003).

Education, here, refers to more comprehensive studies that can make managers literate of computers; not to the short-term in-service training courses about the use of information technologies since majority of the managers in the mentioned schools have received education in working with computers. On the other hand, almost all of these managers gave "Yes" answer to the question "Would you like to receive education about computers?" Therefore, the quality, time and methods of the education given could be revised. Particularly, online education services could be emphasized so that continuum and duties of managers are not hindered.

Majority of the managers stated that they took pains to have all computers always ready to use. Only half of the managers involved in the study stated that they could get help easily when they encountered a problem about software. When a problem was encountered, school managers, firstly, asked for help from the place they bought the software. Also, in his study including schools of 26 countries, Pelgrum (2001) stated that among the most important hurdles which managers encounter in applications of the managerial information systems is that they cannot get enough help when they encounter a problem. It is seen that this is the case in the schools in Edirne. It is clear that specialists to help managers to solve the problems encountered not only in information technologies but also in software are needed at schools. These specialists could be one of the teachers of computer technologies or among the other teachers in the school who received a comprehensive training in this subject. Until it is ensured that each school has an information systems specialist, Centers of School Technical Support within the body of Offices of Education Service Centers should be activated.

Managers involved in the study mostly stated that they took precautions for the safety of the data in the computer. These precautions were antivirus programs, password and back up.

In the schools within the scope of the study, the most frequent data input were institution's data, students' data, instructors' data, students' grades and attendances respectively. Lists and documents prepared by means of information systems were those about students and instructors and statistics about students respectively. In the decision making of the manager about educational and managerial activities and in organizing school activities both on time and without any handicap, these data were relatively more important than other data and lists and documents prepared by means of those data. Therefore, data input in these subjects and studies based on these data are expected to be intensive. However, as it is seen, it is a matter of fact that information systems are still used in simple data processing techniques and routines in these schools. In fact, results of the studies in most of the countries (May, 2003; Christopher, 2003) show that school managers use information systems at the said level.

On the other hand, it's seen that an important part of the study related to the improvement and use of database was done by the headmaster and assistant headmasters. However, teachers took very little part in both data entry and preparation of list, statistics and document. In schools which had a transition period in information systems, due to this research results, the workload of these applications were mostly undertaken by the headmaster and the assistants. There are some teachers responsible for data entry at schools during the practices which are done in different countries. For example in Nederland these officials are called as "SIS Officers, (Visscher and Bloemen, 1999), in Israel "School Computer Manager". These teachers are responsible for the preparations of the reports, statistics and various lists to the administration and also responsible for the database update (Telem, 2001). In our country, since an officer like them doesn't work in our schools and the managers mostly undertake these businesses, it might restrict the time for their other administrative duties. For today, this might not be so much restrictive. The school administrators indicated that they did not have important problems about entering information which are wanted from upper institutions to the system, updating the data regularly, etc. However, in the future if the mentioned works become more complex, problems about this might increase. On the other hand, in their research Hedberg and his friends (1992) determined that School Management Information Systems are used more effectively in the schools where teachers participate in data entering and reporting studies. In this point of view, if the participation of the teachers to these studies and the encouragements of the unwilling teachers can be achieved, it might provide more affective usage of School Management Information Systems in primary schools.

The examination of the information systems shows relatively that the most important contribution is the simplification of the document preparation. Getting easier of data saving and correspondence, making more operations, correcting errors more easily than before, transmitting the information which is wanted from upper institutions, decreasing errors, noticing the errors easily and transferring the information related to the students easily follow in turn. In Schiller's research which was done with Australian School Managers (2003), the managers stated that they did their studies quickly and more qualified with School Management Information Systems. In research of Zain, Atan, and Idrus (2004) which was done in Malezia, it was determined that the most important effects of School Management Information Systems are not only deciding the information but also reaching information easily. In researches of May (2003), Borruso (2000), Peterson (2000), Inkster (1998) and Arnold (1998) it was established that technology affects the work performance of the school managers positively. As a result School Management Information Systems provide important contributions about the school management to the school managers.

While school managers stated that the most frequent problem they suffer from information systems is that they have to stop working in cases such as electricity cut, the least frequent problem was given as the lack of systematic up-dating of data. Also in the study of Pelgrum (2001) in 26 countries, in the study of Mentz and Mentz (2003) in South Africa, and in the study of Zain, Atan and Idrus (2004) in Malaysia, school managers stated that lack of infrastructure such as electricity cut, lack of technical support, and the problems with providing data security hindered effective use of the system. Similarly, the most important obstacle in effective use of the managerial information systems here is the lack of infrastructure, therefore lack of planning.

School managers stated that the most important relative effect of information systems to their managerial effectiveness is that it allows to reach easily the information needed to alter the problems and that the data input in the computer are effective in making managerial decisions. In the studies done in this subject produced similar results in many countries. In their study about Israeli school managers, Telem and Buvitski (1995); in his study about Australian school managers, Gurr (2000); in his study about South African managers, Van Heerden(1991); in his study about school managers in Virginia, Christopher(2003); and in his study about school managers in Texas, Gregorash (2004) found that school management information systems help school managers make managerial decisions. As Telem (1991) emphasized, more frequent, more complex and faster decisions have been made in schools of today. This decision making requires more data and complex relations among these data which should be taken into consideration. Moreover it is a must to base these decisions on current/recent data. The results of this study reveal that school management information systems allow managers to be able to make effective decisions based on recent/current data.

The less important relative effect of information systems to their managerial effectiveness is that they lessen managers' responsibilities and workload. In the study of Telem and Buvitski (1995), and in the study Visscher and Bloemen about managers in Holland, it was seen that school management information systems changed the duties of school managers but did not lessen their workload. These results show similarity with the findings of this study. This may result from the fact that school management information systems do not change the duties of the managers but the way they implement their duties. As we see, information systems do not lessen the workload of the managers but make radical changes by entrusting new duties and developing the old ones. (Pegler, 1992; Christopher, 2003; Gurr, 2000; Flanagan&Jacopsen, 2003). For example, student lists or statistics that were prepared manually before have now been prepared with school management information systems from now on. Here, it is apparent that the most important achievement of the school managers in school management information systems is the economy of time. In this study, also, managers showed that they made use of their times more effectively owing to the school management information systems. In the study of Telem (1997), school managers stated that they made use of their times more effectively through school management information systems, which agrees with the results of this study. In conclusion, it can be said that school managers can make more effective decisions by having more data as well as they have enough time to implement them.

For all of the items, school managers stated that the contribution of information systems to their vocational development was at a serious level. They stated that the most important contribution of information systems relative to their vocational development is that their enthusiasm to improve themselves has increased. Following that, changing opinions about technology, increased quality of the studies, courage to look for different alternatives to solve problems and increased ability to solve problems come respectively. In the studies of both Gurr (2000) and Schiller (2003), it was determined that school management information systems had positive effects on the vocational developments of the managers. As it was stated by the studies (Kicklighter, 2004; Seay, 2004; Patterson, 2004; Mannino, 2004; Duncan, 2004; Gene, 2003; Owens, 2003), school managers are one of the keys to the success in the educational innovations.

Managers, being the leader of the school, should also undertake the responsibility of easing the innovation process. Managers' view of technology and their attitudes towards the use of technology have effects on teachers, too. This fact attaches importance to managers' adaptation and their positive attitude towards technological innovations.

In conclusion, a study with long-term plans initiated by completing insufficiencies in infrastructure is needed for the effective use of school management information systems in schools. Managers should be encouraged to use information systems and they should believe that data are valuable sources for decision making and that the information systems back up the implementation of educational reforms. It should be ensured that school managers took part in making decisions about these applications in order to make them embrace innovations.

REFERENCE

- Allen, J.G. (2003). *A study of the professional development needs of Ohio principals in the area of educational technology*. Doctorate Thesis. Cincinnati: University of Cincinnati
- Anderson, R.E.; Dexter, S. (2005). School technology leadership: an empirical investigation of prevalence and effect. *Educational Administration Quarterly*, 41(1), 49-82
- Arnold, D.M. (1998). *A descriptive study of principals' and teachers' perceptions of the value of technology for schools*. Doctorate Thesis. University Of Cincinnati.
- Bellum, J.M. (2003). *Rogers' innovation process in organizations: information systems implementation in education organizations*. Doctorate Thesis. Nebraska: University of Nebraska.
- Borruso, G. A. (2000). *A study of secondary principals utilization of computer software as it relates to their job tasks*. Doctorate Thesis. Dowling College.
- Blake, R. (2000). An investigation of technology competencies of school-based administrators in Florida schools. *Dissertations Abstract International*. AAT 9977808.
- Christopher, J.C. (2003). *Extent of decision support information technology use by principals in Virginia public schools*. Doctorate Thesis. Virginia: Virginia Commonwealth University.
- Dawson, C.G.B. (2001). *A national study of the influence of computer technology training received by K--12 principals on the integration of computer technology into the curricula of schools*. Doctorate Thesis. University Of Louisiana At Monroe
- Demir, K. (2003). İl milli eğitim müdürlüğü yönetim bilgi sistemlerinin değerlendirilmesi. *Eğitim Yönetimi*, 9 (36), 558-581.
- Duncan, E.H. (2004). *The middle school principal as leader of change in the integration of technology in middle school instruction*. Doctorate Thesis. School of Saint Louis University.
- Flanagan, L.; Jacobsen, M. (2003). Technology leadership for the twenty-first century principal. *Journal of Educational Administration*, 41(2), 124-142.
- Gene, U.G. (2003). *Missouri public school principals' computer usage and conformity to technology standards*. Doctorate Thesis, Columbia: University Of Missouri.
- Gentry, D. R. (2005). *Technology supported data-driven decision-making in an Oklahoma elementary school*. Doctorate Thesis, Oklahoma: University of Oklahoma.
- Goeltz, H.R. (1998). *An analysis of the relationship of personality type and technology training on a principal's attitudes toward implementation of technology in schools*. Doctorate Thesis. Idaho State University.
- Gregorash, L.A. (2004). *The Influence of site-based management on educational technology decision-making strategies as perceived by selected school principals in Bexar County*. Doctorate Thesis, Texas: Texas A&M University.
- Gurr, D. (2000) How Information and Communication Technology is changing the Work of Principals. *International Congress of School Effectiveness and Improvement*, Hong Kong.
- Haag, S.; Cummings, M.; Dawkings, J. (1998). *Management Information Systems for the Information Age*. McGraw-Hill Pub.
- Hedberg, J.G.; Harper, B; Bloch, D.;College, B. (1992). Educational information systems: Problems of the small educational organisation. *Australian Journal of Educational Technology*, 8(2), 132-160.
- Inkster, C.D. (1998). *Technology leadership in elementary school principals: A comparative case study*. Doctorate Thesis. University Of Minnesota.
- Jetton, R. C. (1997). *The impact of the principal's attitudes toward the implementation of computer related technology and restructuring as perceived by Texas high school principals in the Region IV Service Center area*. Doctorate Thesis. Texas A&M University
- Kicklighter, J.A. (2004). *An investigation of Georgia elementary principals' characteristics and their influence on the use of technology in schools*. Doctorate Thesis. Georgia: Georgia Southern University.
- May, S. J. (2003). *The impact of technology on job effectiveness: Perceptions of high-school principals*. Doctorate Thesis. Northern Illinois University.

- Mannino, T.C. (2004). *Principals' perceptions of resistance to technology integration in the classroom*. Doctorate Thesis. The Pennsylvania State University.
- MEB. (2002). *Bilgi ve İletişim Teknolojileri*. <http://www.meb.gov.tr>
- Mentz, M.; Mentz, K. (2003). Managing technology integration into schools: A South African perspective. *Journal of Educational Administration*, 41 (2), 186-200.
- Owens, T.S. (2003). *Study of innovative teachers' use of technology and the perceived influence principals have upon the integration of instructional technology in the classroom*. Doctorate Thesis. University Of Central Florida.
- Patterson, S. (2004). *Principals' perceptions toward technology: a study of principals' technology integration in Alabama public schools*. Doctorate Thesis. Alabama: University of Alabama.
- Pegler, G. (1992). Perspectives for school information systems. *Australian Journal of Educational Technology*, 8(2), 161-171. <http://www.ascilite.org.au/ajet/ajet8/pegler.html>
- Pelgrum, W.J. (2001). Obstacles to the integration of ICT in education: results from a worldwide educational assessment. *Computers & Education* 37, 163–178.
- Peterson, R. B. (2000). *Principals perceptions of the technological knowledge and skills necessary for effective school leadership*. Doctorate Thesis. The University Of North Carolina at Chapel Hill.
- Riffel, J.A.; Levin, B. (1997). Schools coping with the impact of information technology. *Educational Management&Administration*, 25 (1), 51-64.
- Schiller, J. (2003). Working with ICT Perceptions of Australian principals. *Journal of Educational Administration*, 41(2), 171-185.
- Seay, D. A. (2004). *A study of the technology leadership of Texas high school principals*. Doctorate Thesis. Texas: University Of North Texas.
- Telem, M. (1999). A case of the impact of school administration computerization on the department head's role. *Journal of Research on Computing in Education*, 31(4), 385-401.
- Telem, M. (1991). A knowledge base for information technology in educational administration. *Journal of Research on Computing in Education*, 23 (4), 594-611.
- Telem, M.; Buvitski, T. (1995). The potential impact of information technology on the high school principal: a preliminary exploration, *Journal of Research on Computing in Education*, 27 (3). 281-297.
- Telem, M. (1997). The school computer administrator's (new) role impact on instruction administration in a high-school--a case study. *Computers Education*, 28 (4), 213-221.
- Van Heerden, S. H. A (1991) *Management information system for principals of primary schools*. Doctorate Thesis. University Of Pretoria, South Africa.
- Visscher, A.; Wild, P. (1997). The potential of information technology in support of teachers and educational managers managing their work environment. *Education and Information Technologies* 2, 263-274.
- Visscher, A.J.; Bloemen, P.P.M. (1999). Evaluation of the use of computer-assisted management information systems in dutch schools. *Journal of Research on Computing in Education*, 32 (1), 172-188.
- Webber, C.F. (2003). New technologies and educative leadership. *Journal of Educational Administration*, 41(2), 119-123.
- World Bank. (2002). Project Appraisal Document on a Proposed Loan in the amount of US\$300 Million to the Republic of Turkey for a second basic education Project. <http://www.worldbank.org>
- Yuen, A.H.K.; Law, N; Wong, K.C. (2003). ICT implementation and school leadership: Case studies of ICT integration in teaching and learning. *Journal of Educational Administration*, 41(2), 158-170.
- Zain, M.Z.M.; Atan, H ve Idrus, R.M. (2004). The impact of information and communication technology (ICT) on the management practices of Malaysian Smart Schools. *International Journal of Educational Development*, 24, 201–211.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.