



The Impact and Benefits of the E-System for Administration Management in Primary and Secondary Schools for Teachers and Parents

Refik Ramadani ^{a++}, Ragmi Mustafa ^{a#*} and Kujtim Mustafa ^{b++}

^a Faculty of Computer Science, Public University, "Kadri Zeka Gjilan", Republic of Kosova.

^b Faculty of Electrical and Computer Engineering, University, "Hasan Prishtina", Prishtina, Republic of Kosova.

Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

This research aims to identify the impact of the E-management system on the work of teachers, parents, and students. Enrolling students with all the information and keeping grades, behaviors, activities, and, most importantly, analytical reports should be an easy process for teachers through the E-system. Parents can track their child's progress at the right time while students receive teacher notifications, complete quizzes, access their success, track their shortcomings, and many other benefits.

The paper focuses on the following research objectives: the impact of the Management System on the organization of the teacher's class, research on the effects of the Management System in

⁺⁺ Ph. D. Candidate;

[#] Associate Professor;

^{*}Corresponding author: E-mail: ragmi.mustafa@uni-gjilan.net

creating and generating analytical reports for each student, analysis of the impact of the Management System on the communication of the teacher with students as well as with parents, Investigating the effects of the Management System on the teacher's will and researching the impact of the Management System on commitment and work by the teacher.

Keywords: E-System; management; teachers; parents; students.

1. INTRODUCTION

This paper aims to research the impact and benefits of the e-System for administration management in secondary schools on teachers and parents to see how the application affects teachers, parents, and students. In this research, two schools were assessed, "Zenel Hajdini" secondary school and Hello private school in Gjilan. Teachers, parents, and students will also be involved in this research.

The use of information technology in educational management has grown rapidly for reasons of efficiency and effectiveness. The value of management information was recognized during its integration stages. The general literature reviews highlighted the positive impact of management systems on school administration and management, including better access to information, more efficient administration, greater use of school resources, reduced workload, better management of time, and improved quality of reports. School management systems have changed school management in the areas of leadership, decision-making, workload, human resource management, communication, accountability, and planning [1-4]

Students' progress over a semester or a year is complicated to write down on paper, and it takes much time. The management system organizes these data in straightforward formats and within seconds. Computerized management of student results, such as grades, behavior, progress, and various functionalities, saves teachers much time. The management system makes it easier for teachers to communicate with students and parents [2].

Making daily and annual information available to parents, such as the reports and data presented in the application, can increase the involvement of parents in everything. This E-System for school administration management contributes to Kosovo's education system.

1.1 Hypotheses

The paper is built based on these hypotheses:

1. The E-System for administration management in secondary schools has a positive effect on the work of organizing the teacher's lesson
2. The E-System for administration management in secondary schools has a positive impact and facilitates teacher-student-parent communication
3. The E-System for administration management in secondary schools facilitates and shortens the time of the process of generating analytics for each student
4. The E-System for administration management in secondary schools increases the disposition and commitment of teachers

2. LITERATURE REVIEW

The education system forms the backbone of any nation. That is why providing a solid educational foundation for the new generation is essential to develop open-minded global learners who secure the future for all. Today's advanced technology can be decisive in guiding education-related processes to promote solidarity between students, teachers, and parents.

The School Management System is a database that manages a school's daily work. The system is configurable and can be configured for the school's needs and used by many users at the same time [2]. The electronic school management system consists of tasks such as student registration, keeping records of absences, maintaining student grades, producing various reports for teachers and parents, and notifications about student activities [3-8].

School Management Systems are within the School Management Information System (SMIS). A School Management Information System (SMIS) is a system or process that provides the information needed to manage a school effectively. The areas of SMIS included in the program are [4-12], [13-29].

2.1 Student Management System

This system is the main database module in the electronic system, connected to other modules.

In this module, student data such as personal data, absences, grades, activities, and comments about the student, as well as reports that are accessible to the teacher, parents, and students, are recorded and saved.

2.2 Teacher Staff Management System

This system is the module that contains the profiles with personal data for the teaching staff.

This paper aims to determine the impact of the E-System for management on the teacher's work and time management. Registration of students with all information, storage of grades, behaviors, activities, and, most importantly, analytical reports should be an easy process for teachers through the E-System. Teachers will have more free time to prepare for the lesson and have more motivation and will for their work.

Another aim of the paper is to determine the impact of the E-System on parents and students. Parents will have access to their children's data, keeping an overview of their children without visiting the school. By constantly monitoring the children's process, they can communicate with them, motivating and helping them achieve better results.

The practical importance of the research is to increase the awareness of educational institutions and parents about the use of E-Systems for management to benefit students' most successful achievements.

3. RESEARCH METHODOLOGY

This study is based on numerous studies involving the use of E-Systems for school management. The study is an action research based on teachers, students, and parents at "Zenel Hajdini" school and "Hello" private school in Gjilan. In total, 30 teachers and 30 parents

from Zenel Hajdini public school participated in the research. The teaching participants of this study were divided into two groups. The experimental group consisted of 15 teachers from "Zenel Hajdini" school, while the control group consisted of 15 teachers from "Hello" school. In advance, research was done on the knowledge of the two groups regarding access to the Internet and the use of E-Systems for management.

The experimental group used the application "E-school" to learn management. The application contains various modules to facilitate the management of learning by teachers. The use of E-School by the experimental group continued for one month. After completing the use of the application, the teachers were submitted to the first questionnaire regarding the hypotheses raised for this study. During this study, three variables were measured.

3.1 Process Completion Time

The experimental and control groups have been added variables to measure the completion time of the processes in the traditional way and through the E-School. Both groups were given ten specific processes to complete by measuring the time for the same process, how long it took in the traditional way, and how long it took through E-School. The right time for completing this task (variable) was one week.

3.2 The Number of Errors Made During the Processes

The experimental group was subjected to the procedure of counting the errors made during the completion of a process using E-School (the second variable). They were tasked with completing ten processes, and we measured the errors they made while completing the processes. Time the time required for the completion of this procedure was one week.

Table 1. Functionalities of E- systems

E-System for the teacher	E-System for the student	E-System for parents
Automation of absences	The process of success in the report	Child report
Grade management	Shortages	Announcements from the teacher
Cooperation with parents	Announcements from the teacher	Absences of the child
Analytical reports	Print success	
Announcements about students		

3.3 Satisfaction Level Questionnaire

The experimental group was asked the third variable, the satisfaction questionnaire, where they answered questions about how satisfied they were with using the E-application.

Test results are collected and recorded. After the action research, we conducted experimental and empirical research, analyzing the collected data in qualitative and quantitative terms.

3.4 Manual Management Systems and their Limitations

The Manual Management System is a system that does not need any computer equipment, where all data is stored manually in the form of paper [5-7]. Effective school management requires attention. Some limitations are related to the Manual Management System [6-9].

The main problem is the loss of documents, where 7.5% of documents are lost, and 3% are wrong. Most of the letters that are lost cannot be reproduced, and this fact dramatically increases the risks related to the data as well as the cost of the school.

Manual school management requires much human effort and a waste of time from the administrative staff. All data should be backed up and stored in a safe place.

Recording student profiles, recording grades, activities, announcements, and searching for a student or teacher are some of the limitations of Manual Systems.

Communication with parents is done by phone, and it is a complex process since the numbers are stored on paper.

In the manual management of the school, the registration of students, staff, or student information has many irregularities. Student absences appear as an obstacle to this type of management, and in this way, teachers can abuse their position by modifying students' grades and data.

4. RESULTS AND DISCUSSION

Demographic statistics, where the experimental group answered these questions, are presented below. The questions are related to the teacher's level of education, years of experience, number

of completed training, and experience with E-systems for school management.

Question 1: What is your level of education?

The first question from the second questionnaire concerns the teachers' level of education. Fig. 1 shows that 66.7% of the surveyed teachers have a Master's education level, while 33.3% have a Bachelor's education level.

Question 2: Have you ever used a Student Management System before?

The second question from the questionnaire is related to Student Management Systems. Fig. 2 shows that 60% of the respondents have never used the Student Management System, and 40% have used it less than five times. From this statistic, we can conclude that most teachers have not used the Student Management System before.

4.1 Descriptive Statistics

Descriptive statistics are presented below for the first and the second questionnaire. The data are presented in the form of a graph. The first questionnaire shows the teachers' attitudes regarding the impact of the Management System on the teaching process. In contrast, the second questionnaire offers the teachers' perspectives regarding satisfaction with the E-School.

Question 3: Do you think that registering student information in the E-system for management makes your work easier?

The third question from the questionnaire refers to the module for registering student information in the E-system. In Fig. 3, we can see that 26.7% of the respondents fully agree that the student registration module facilitates their work, 40% agree that the module facilitates their work, 13.3% have a neutral attitude, and 20% do not agree at all. From these positive results, we note that most of the respondents think positively about the impact of the E-system on their work.

Question 4: Do you think registering grades electronically in the E-system saves you much time?

The fourth question from the questionnaire concerns the module for recording students' grades in the E-system. In Fig. 4, we can see that 73.3% of the respondents fully agree that the

module for recording students' grades facilitates their work, while 26.7% agree that it facilitates their work. From these positive results, we note that most of the respondents think positively about the impact of the E-system on their work.

Question 5: Do you think that the E-system for management makes it easier to generate analytics for each student?

The fifth question from the questionnaire belongs to the module for generating analytics for each

student in a simpler way in the E-system. In Fig. 5, we can see that 40% of the respondents completely agree that the module for generating analytics for each student is simpler, 20% agree, 13.3% have a neutral attitude, and 13.3% disagree. In comparison, 13.3% do not agree at all that the module facilitates the way of generating analytics. From these positive results, we note that most respondents think positively about the impact of the E-system in generating analytics for each student.

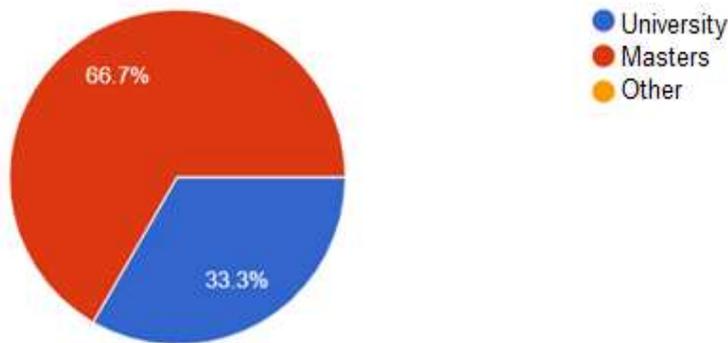


Fig. 1. What is your level of education?

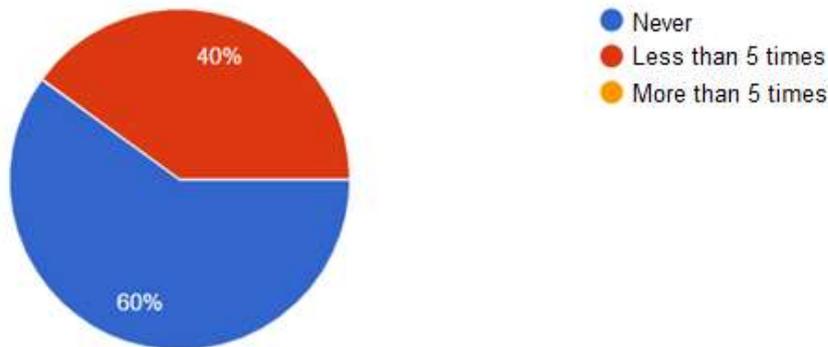


Fig. 2. Statistics about the use of student management systems

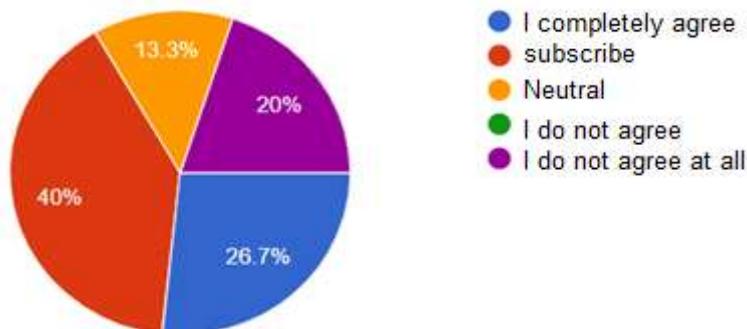


Fig. 3. Registration of information for students

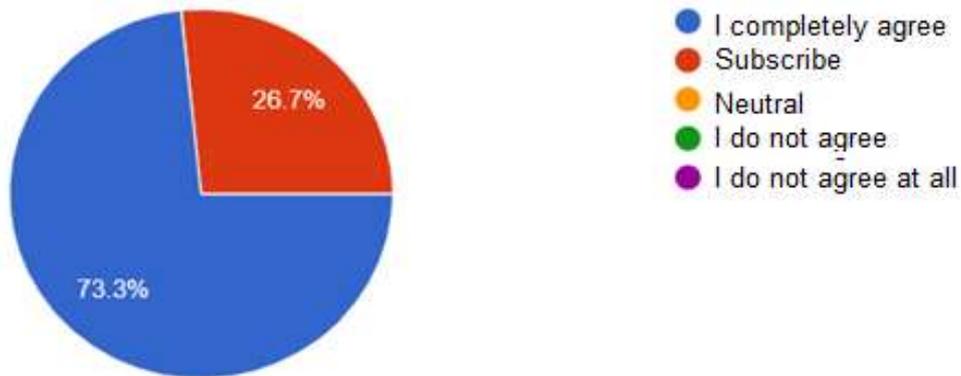


Fig. 4. Registration of students' grades

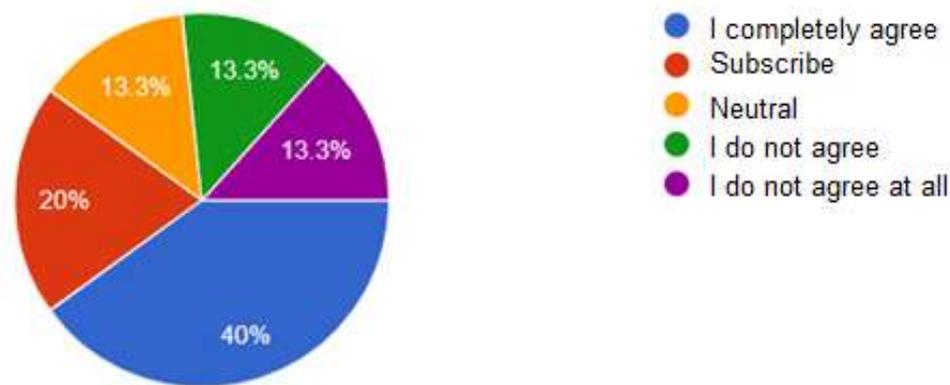


Fig. 5. Generating analytics for each learner

Question 6: Do you think that the E-system for management increases your willingness to teach?

The sixth question from the questionnaire concerns the increase of the teachers using the E-System. In Fig. 6, we can see that 26.7% of the respondents completely agree that the use of the E-System has a positive effect on increasing the willingness to teach, 26.7% agree, 20% have a neutral attitude, 13.3% disagree, while 13.3% do not agree at all that the use of the E-System has a positive effect on increasing the willingness to teach. From these positive results, we note that most of the respondents think positively about the impact of the E-system in increasing the desire to teach.

Question 7: Do you think that the E-system for management increases your commitment to teaching?

The seventh question from the questionnaire concerns the increase in the teacher's commitment to using the E-System. In Fig. 7, we

can see that 33.3% of the respondents completely agree that the use of the E-System has a positive effect on the increase in commitment to teaching, 26.7% agree, 13.3% have a neutral attitude, 13.3% disagree, while 13.3% do not agree at all that the use of the E-System has a positive effect on the increase in commitment to teaching. From these positive results, we note that most of the respondents think positively about the impact of the E-system in increasing commitment to teaching.

The experimental group was asked the third variable, the satisfaction questionnaire, where they answered questions about how satisfied they were with using E-School.

Question 8: How satisfied are you with the modules included in the E-School?

The eighth question in the questionnaire is about how satisfied the respondents are with the modules included in the E-School. In Fig. 8, we can observe that 26.7% of the respondents think that the modules are included excellently in the

E-School, 33.3% of the respondents think that they are included very well, 13.3% have a neutral attitude, 13.3% believe that they are included enough, while 13.3% are not satisfied with the inclusion of modules in the E-School. From these positive results, we can conclude that most respondents are satisfied with the modules.

Question 9: How satisfied are you with the grade recording module?

The ninth question in the questionnaire concerns how satisfied respondents are with the grade recording module. In Fig. 9, we can see that 33.3% of the respondents are excellently satisfied with the grade recording module, 20% very well, 13.3% have a neutral attitude, 20% are quite satisfied with the grade recording module, while 13.3% are dissatisfied. From these positive results, we can conclude that most respondents are satisfied with the grade recording module.

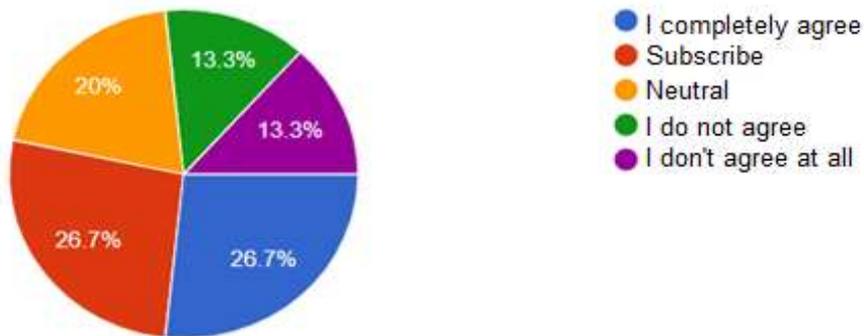


Fig. 6. The teacher's willingness to use the E-system

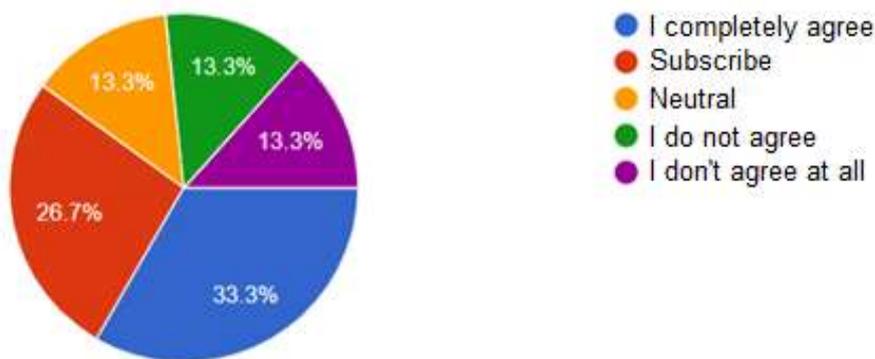


Fig. 7. The impact of the E-system on commitment to teaching

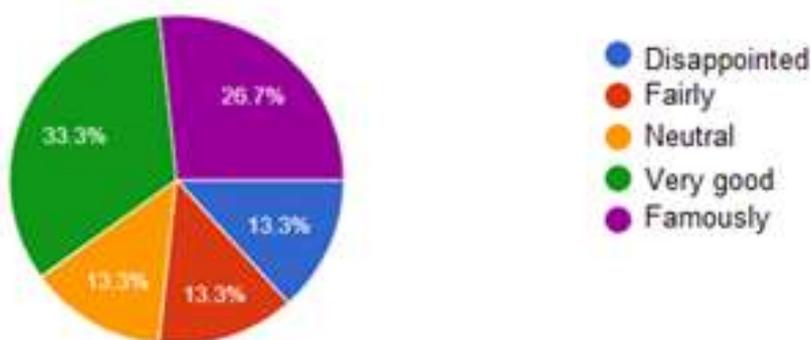


Fig. 8. How satisfied are you with the modules included in the E-school?

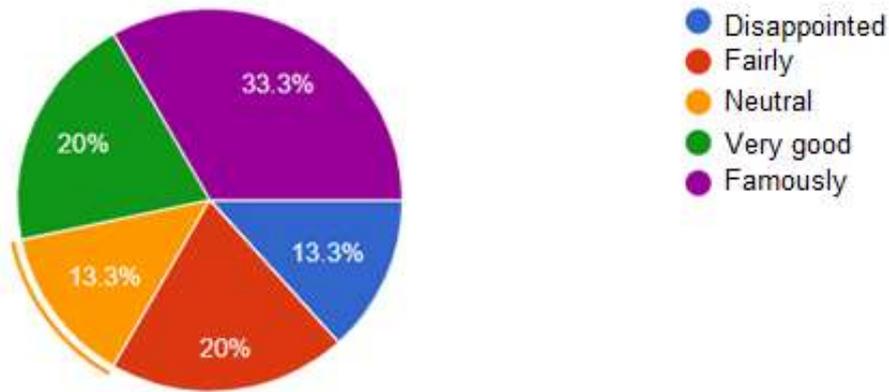


Fig. 9. How satisfied are you with the grade recording module?

Question 10: How satisfied are you with the operations offered by E-School?

The tenth question from the questionnaire is about how satisfied the respondents are with the operations offered by the E-School. In Fig 10, we can observe that 26.7% of respondents are satisfied at an excellent level with the operations provided by the E-School, 20% are very satisfied, 13.3% have a neutral attitude, 13.3% are sufficiently satisfied, while only 26.7% are not satisfied. From these positive results, we can conclude that most of the respondents are satisfied with the operations offered by E-School.

Question 11: How satisfied are you with the accuracy that E-School offers?

The eleventh question from the questionnaire is about how satisfied the respondents are with E-School's accuracy. In Fig. 11, we can see that 26.7% of respondents are satisfied at an excellent level with the accuracy offered by E-School, 26.7% are very satisfied, 13.3% have a

neutral attitude, 20% are sufficiently satisfied, while only 13.3% are not satisfied. From these positive results, we can conclude that most of the respondents are satisfied with the accuracy offered by E-School.

Question 12: How satisfied are you with the student information that you can communicate to parents through E-School?

The twelfth question from the questionnaire is about how satisfied the surveyors are with the information about students that they can communicate to parents through E-School. In Fig. 12, we can observe that 21% of respondents are satisfied at an excellent level with the student information provided by E-School, 20% are very satisfied, 19% have a neutral attitude, 13.3% are sufficiently satisfied, while only 26.7% are not satisfied. From these positive results, we can conclude that most respondents are satisfied with the students' information that they can communicate to their parents through E-School.

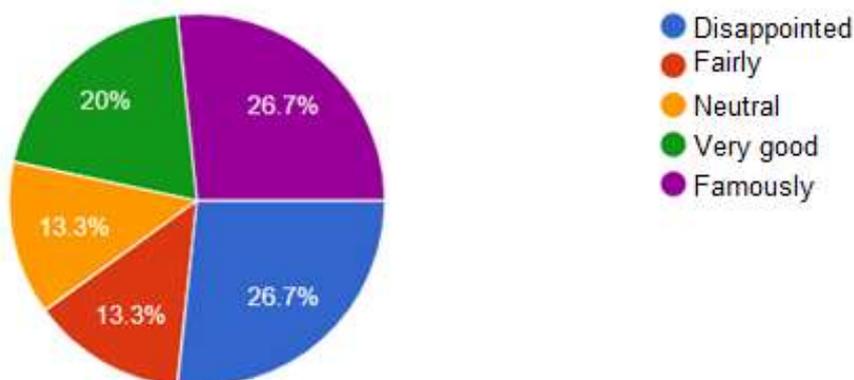


Fig. 10. How satisfied are you with the operations offered by E-school?

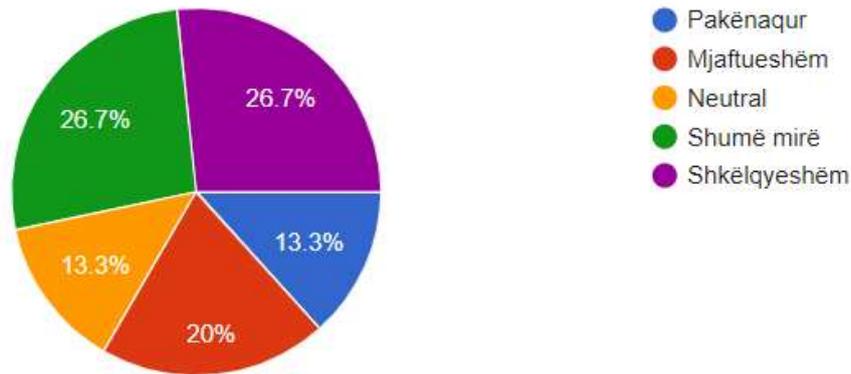


Fig. 11. How satisfied are you with the accuracy that E-school offers?

Question 13: How satisfied are you with the students' information that you can communicate to them through E-School?

The thirteenth question from the questionnaire is about how satisfied the surveyors are with the information of the students that they can communicate to them through the E-School. In Fig.13, we can observe that 26.7% of respondents are satisfied at an excellent level with the student information provided by the E-School, 26.7% are satisfied, 20% have a neutral attitude, 13.3% are sufficiently satisfied, while 13.3% are not satisfied. From these positive results, we can conclude that most respondents are satisfied with the information they can communicate to the students through E- school.

Question 14: How satisfied are you with the analytical reports you can generate at E-school?

The fourteenth question from the questionnaire is about how satisfied the respondents are with the analytical reports they can generate through E-

School. In Fig. 14, we can observe that 21.4% of respondents are satisfied at an excellent level with the analytical reports they can generate through E-School, 28.6% are very satisfied, 21.4% have a neutral attitude, 14.3% are sufficiently satisfied, while only 14.3% are dissatisfied. From these positive results, we can conclude that most respondents are satisfied with the analytical reports they can generate through E-School.

Question 15: How satisfied are you with the creative space that E-School offers you?

The fifteenth question from the questionnaire is about how satisfied the respondents are with the space E-School offers. In Fig. 15, we can see that 26.7% of respondents are very satisfied with the space provided by E-School, 33.3% are very satisfied, 13.3% have a neutral attitude, 13.3% are sufficiently satisfied, while only 13.3 are unhappy. From these positive results, we can conclude that most respondents are satisfied with the space E-School offers.

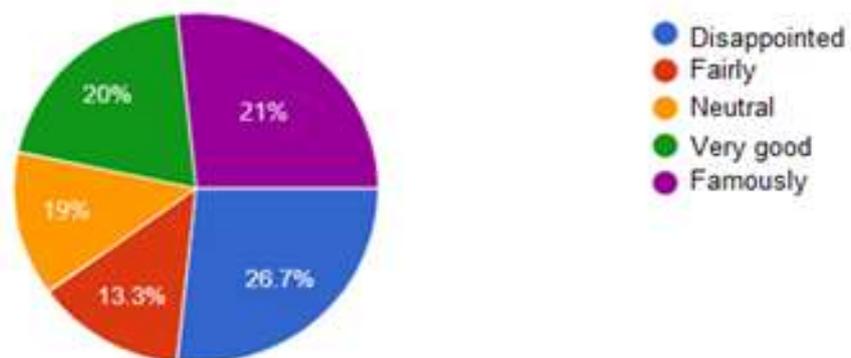


Fig. 12. How satisfied are you with the information provided by E-school?

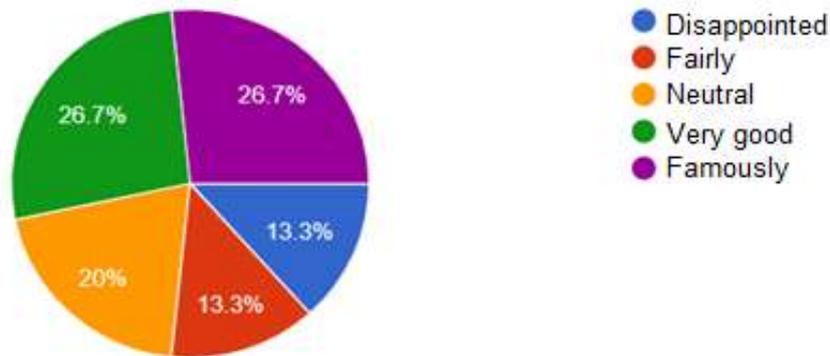


Fig. 13. How satisfied are you with the information you can communicate to them?

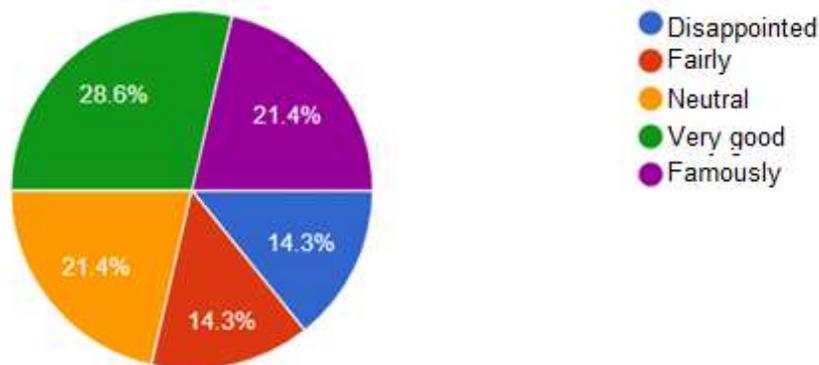


Fig. 14. How satisfied are you with the analytical reports

4.2 Results of Variables

Below are presented the results of the measurements of the variables: the variable for measuring the time of completion of the process and the variable for measuring the number of errors made during the process. After two weeks of testing and observation, where 30 teachers participated in this research, the results were collected and analyzed.

4.3 Variables for Measuring Process Completion Time

The experimental and control groups were added to the questionnaire to measure the completion time of the processes in the traditional way and through the E-School. Both groups were given ten specific processes to complete by measuring the time for the same process, how long it took traditionally, and how long it took through E-School. The appropriate time for the completion of this variable was one week. In Table 2, we can see the accumulated results for the experimental

and control groups. The process column lists the processes for which the variable was measured. These descriptive results show a significant difference along the mean of the measured variable between the two groups.

In Table 3, we can see the descriptive statistics for both groups. The average of the experimental group has a score of 9.3, while the average of the control group has a score of 35.5. From these results, we can conclude that the experimental group has a lower average for completing processes while the control group has a significantly higher average (Experimental Group 9.3 < Control Group 35.5).

The ENOVA in Table 4 presents the results analyzed between and within two groups. From the table, we see that the F value = 4.904466 is greater than the critical F value = 4.413873, where we can conclude that it is a positive result since the experimental group has a lower mean of completing the processes

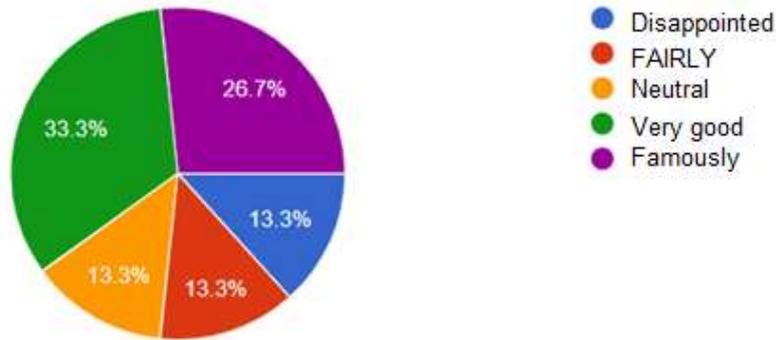


Fig. 15. How satisfied are you with the creative space that E-school offers you?

Table 2. Variables for measuring the completion time of processes

The results of the variable for measuring the time of completion of the processes		
Process	Average process completion by experimental group	Average completion of the process from the control group
Clock recording	5 minutes	5 minutes
Student registration	8 minutes	10 minutes
Registration of absences	5 minutes	5 minutes
Recording grades	5 minutes	5 minutes
Weekly report for the student	10 minutes	40 minutes
Monthly report for the student	10 minutes	60 Minutes
Annual report for the student	10 minutes	2 hours
Notices to the student	5 minutes	10 minutes
Homework assessment	30 minutes	1 hour
Notices to parents	5 minutes	30 minutes

Table 3. Statistics for the two groups

Groups	Count	Sum	Average	Variance
Experimental group	10	93	9.3	58.23333
Control group	10	355	35.5	1341.389

Table 4. Enova table

ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crib
Between Groups	3432.2	1	3432.2	4.904466	0.039928	4.413873
Within Groups	12596.6	18	699.8111			
Total	16028.8	19				

In the histogram in Fig. 16, we see that the curve tilts to the left, where the value of 10 has the highest Frequency of all values. This shows that the result of the experimental group is positive because the Frequency value is relatively low. The curve in the Histogram in Fig. 17 is almost symmetrical, where the values 10, 60, and 120 have higher Frequency than other values. This shows that the result of the control group is negative compared to the experimental group since the Frequency values are high enough.

4.4 Variable for Measuring the Number of Errors Made During the Process

The experimental group was subjected to the second variable for errors while completing an E-School process. They were tasked with completing ten processes, and we measured the mistakes they made while completing the processes. The appropriate time for the completion of this variable was one week. In Table 5, we can see the accumulated results for

the experimental group. The Process column lists the processes for which the variable was measured. From these descriptive results, we can observe a small number of errors made during the completion of a process

In the histogram of the control group in Fig. 18, we see that the curve tilts to the left, where values 2 and 4 have the highest Frequency of all values; this shows that the result of the experimental group is positive since the Frequency values are pretty low. The experimental group completed the processes with a minimal number of errors.

4.5 Discussion of the Results About the Hypotheses

The purpose of the research is based on the research of these four hypotheses:

- The E-System for administration management in secondary schools has a positive effect on the work of organizing the teacher's lesson

- The E-System for administration management in secondary schools has a positive impact and facilitates teacher-student-parent communication
- The E-System for administration management in secondary schools facilitates and shortens the time of the process of generating analytics for each student
- The E-System for administration management in secondary schools increases the willingness and commitment of teachers

Questionnaire questions about the first hypothesis are presented in the following Table 5.

The respondent's answers to the three questions for the first hypothesis are shown in the graph in Fig. 19. We see that the attitudes of the respondents are generally positive, where 30% of the respondents completely agree and 27% agree regarding the E-School modules, only 13% of respondents have a neutral attitude, 13% disagree, and only 17% disagree at all with the three E-School modules presented in Table 6.

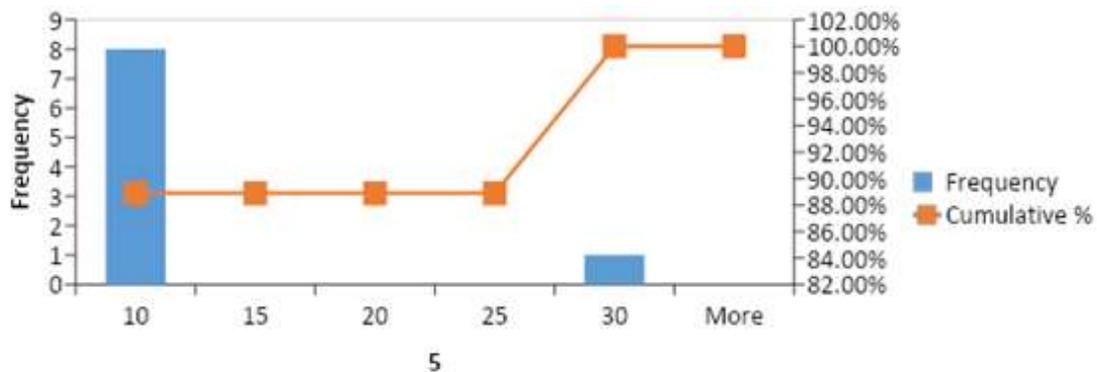


Fig. 16. Histogram of the experimental group

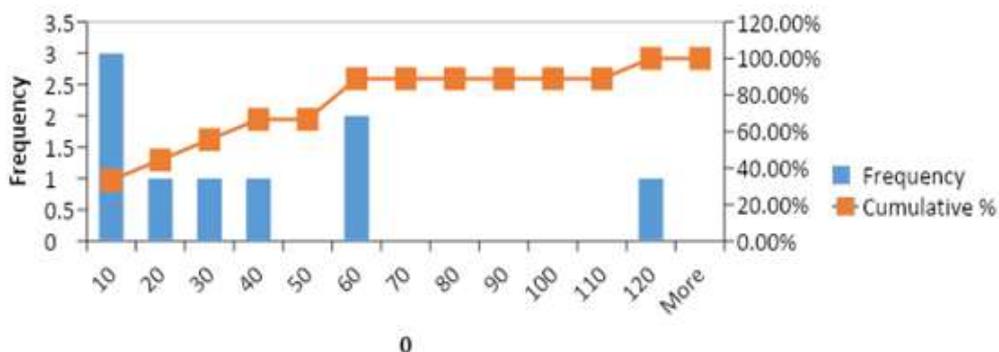


Fig. 17. Histogram of the control group

Table 5. Table for the number of errors made during the completion of a process

The variable scores for the number of errors made while completing a process	The average number of errors made during the completion of a process
Clock recording	2 Errors
Student registration	2 Errors
Registration of absences	0 Errors
Recording grades	0 Errors
Weekly report for the student	2 Errors
Monthly report for the student	3 Errors
Annual report for the student	3 Errors
Notices to the student	1 Error
Homework assessment	4 Errors
Notices to parents	1 Error

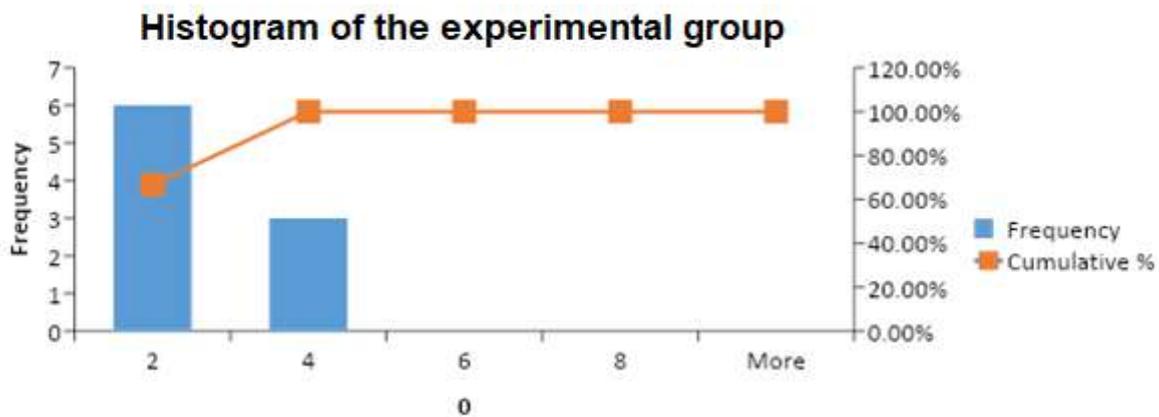


Fig. 18. Histogram of experimental set- error measurement variable

From the positive statistics presented in the graph where the E-School modules have facilitated work and saved teachers' time, we can prove the accuracy of the first hypothesis.

Questionnaire questions about the second hypothesis are presented in the following Table 6.

The respondent's answers to the two questions for the second hypothesis are shown in Fig. 20. We see that the respondents' attitudes are generally positive, where 35% of the respondents

completely agree, 26% agree, 13% have a neutral attitude, 13% disagree, and only 13% disagree regarding the two E-School modules presented in Table 7.

From the positive statistics presented in the Chart where the E-School modules have facilitated communication with parents as well as teacher-student-parent communication, we can prove the accuracy of the second hypothesis.

Questionnaire questions about the third hypothesis are presented in the following Table 7.

Table 6. Questionnaire questions about the first hypothesis

1. Do you think that registering information about students in the E-System for management facilitates your work?
2. Do you think that registering grades electronically in the E-System saves you a lot of time?
3. Do you think that recording students' comments and absences in the E-System for management saves you a lot of time

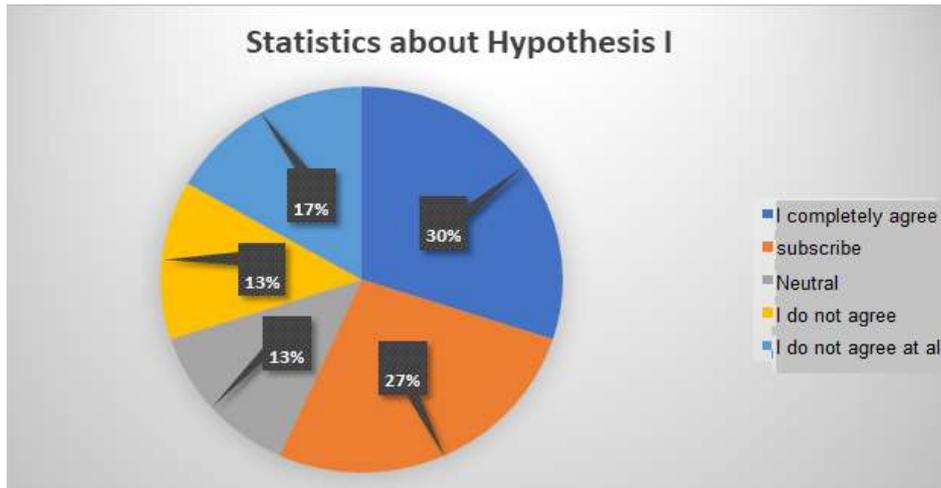


Fig. 19. Graph for hypothesis statistics

Table 7. Questionnaire questions about the second hypothesis

1. Do you think that announcements about meetings and information for parents in the E-System for management facilitate communication with parents
2. Do you think that the student report module for parents in the E-System for management has a positive impact on teacher-student-parent communication?

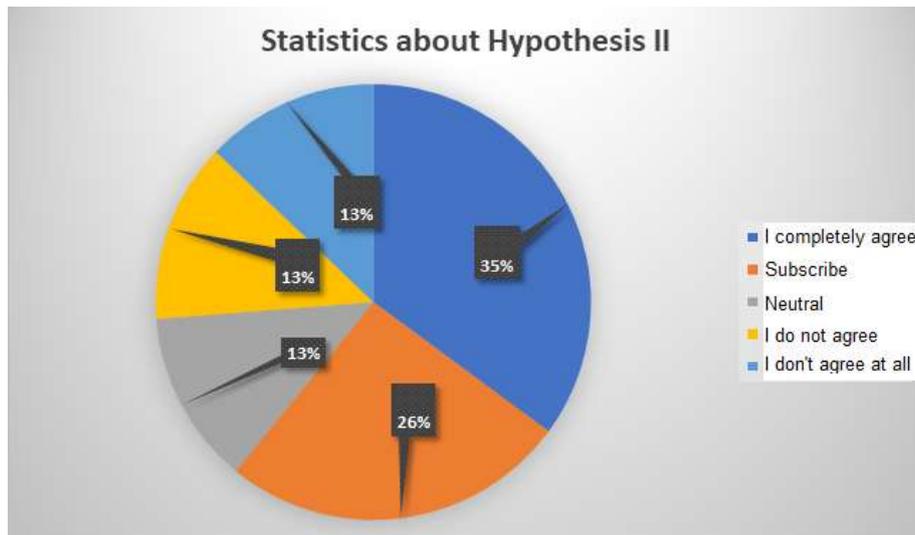


Fig. 20. Graph for Hypothesis II statistics

The answers of the respondents about the two questions for the third hypothesis are shown in Fig. 21. We see that the attitudes of the respondents are generally positive where 37% of the respondents completely agree and 27% agree, 13% of the respondents have a neutral attitude, 10% do not agree and only 13% do not agree at all with the 2 modules offered by E-School presented in Table 8.

From the positive statistics presented in the Chart where the E-School modules have facilitated the generation of analytics for each student and shortened the time of the analytics generation process for teachers, we can prove the accuracy of the third hypothesis.

Questionnaire questions about the fourth hypothesis are presented in the following Table 8.

Table 8. Questionnaire questions about the third hypothesis

1. Do you think that the E-System for management affects the facilitation of the generation of analytics for each student?
2. Do you think that the E-System for management affects the shortening of the process of generating analytics for each student?

Table 9. Questionnaire questions about the fourth hypothesis

1. Do you think that the E-System for management increases your willingness to teach?
2. Do you think that the E-System for management increases your commitment to teaching?

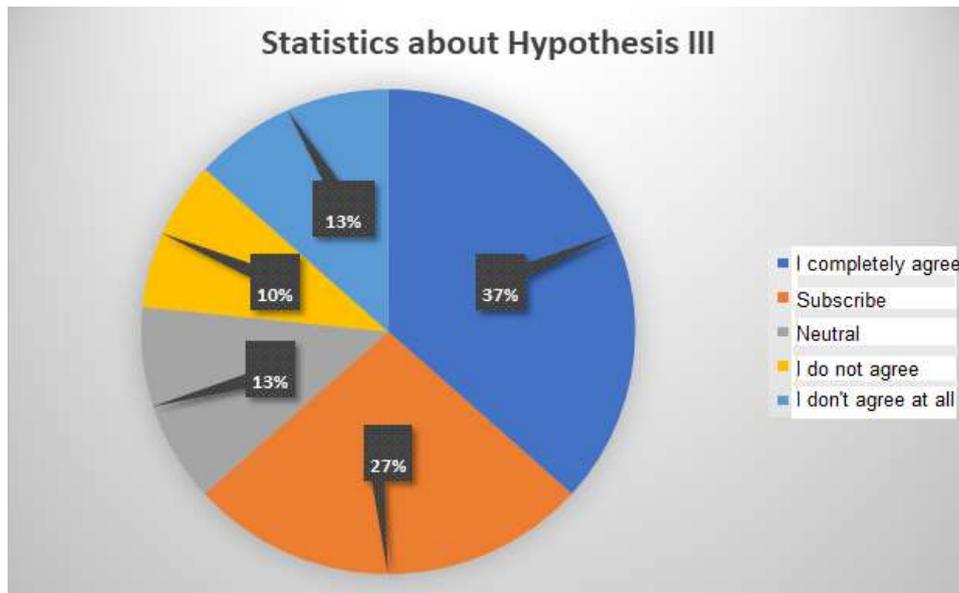


Fig. 21. Graph for Hypothesis II statistics

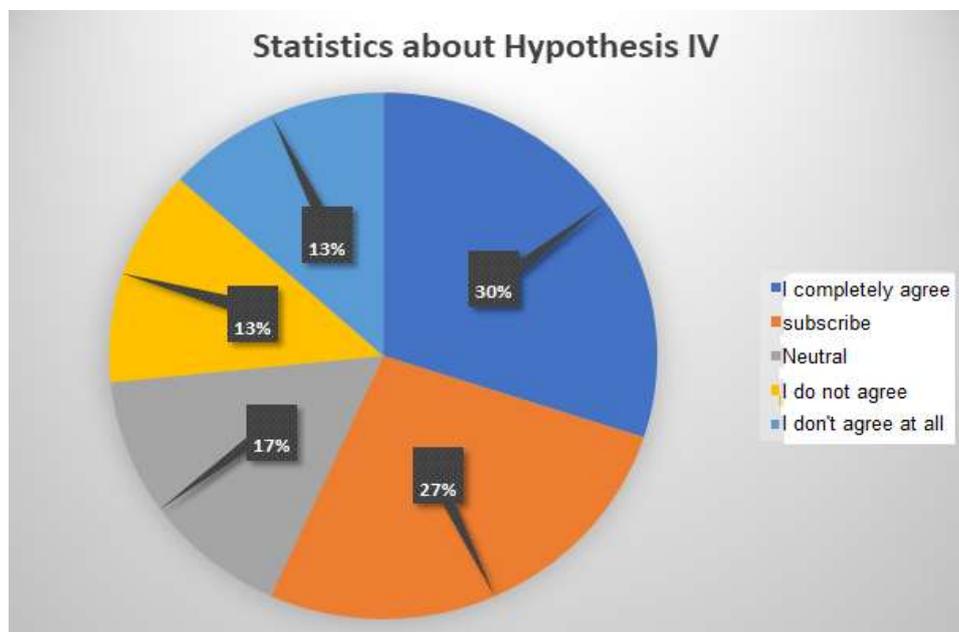


Fig. 22. Graph for hypothesis IV statistics

The answers of the respondents about the two questions for the fourth hypothesis are presented in Fig. 22. We see that the attitudes of the respondents are generally positive where 30% of the respondents completely agree and 27% agree, 17% of the respondents have a neutral attitude, 13% disagree and only 13% disagree at all regarding the 2 E-School modules presented in Table 9.

From the positive statistics presented in the Chart where the E-School modules have facilitated the generation of analytics for each student and shortened the time of the analytics generation process for teachers, we can prove the accuracy of the fourth hypothesis.

5. CONCLUSION

Integrating school management systems is efficient and very useful in the work of teachers and the teaching process. Numerous easy-to-use modules facilitate the work of teachers. Any information about the student, the lesson, and the generation of reports for students can be safely saved through E-School. The process of the student's progress is not closed inside the diary, but parents and students have access to this process all the time. This access can be done from any hardware unit with an Internet connection. Communication of announcements to students and parents is very simple through E-School, while teacher-student-parent communication deepens even more through E-School.

CONSENT

As per international standards or university standards, respondents' written consent has been collected and preserved by the author(s).

From the empirical study of the data, the measurement of the variables, and their analysis from the quantitative and qualitative point of view, which were carried out in the experimental group and the control group, after comparing the results, we concluded that the school management systems have a positive impact on teaching and learning. After the analyzed statistics, we can figure that school management systems facilitate the work of teachers, save their time in completing various processes, communication with students and parents is much more pronounced, and students and parents can constantly follow the progress of

their and their children's learning and behavior. School management systems should also be practiced in public schools as their importance is quite significant for the development of education and the education of students.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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