# Electronic school diary for statistical analysis of student progress

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**Abstract**

This study investigated the effects of using a digital diary to facilitate the calculation of administrative statistics of teachers and classrooms caregivers. The purpose of this study was to explore the use of an electronic diary (e-diary) in supporting teachers and classrooms caregivers to successfully complete administrative work related to completing the school diary. A quantitative design was used to obtain data from teachers and classrooms caregivers through questionnaires. The sample will include 12 elementary school teachers 0-5 and 8 lower secondary teachers 6-9. A closed-ended questionnaire according to the Likert scale was used for data collection. Overall, the study showed many potential advantages in using a digital diary at school to facilitate administrative tasks. Also, the results of the study are showing that the teacher and classrooms caregivers were very satisfied with the integration of the e-diary to successfully complete the statistical tasks calculated automatically from the electronic diary.

**Keywords:** Electronic diary, e-diary, management, school

**Resumo**

Este estudo investigou os efeitos do uso de um diário digital para facilitar o cálculo de estatísticas administrativas por professores e cuidadores de sala de aula. O objetivo deste estudo foi explorar o uso de um diário eletrônico (e-diário) no apoio a professores e cuidadores de sala de aula para concluir com sucesso o trabalho administrativo relacionado ao preenchimento do diário escolar. O desenho quantitativo foi usado para obter dados de professores e tutoriais em sala de aula por meio de questionários. A amostra incluirá 12 professores do ensino primário 0-5 e 8 professores do secundário inferior 6-9. Para a coleta de dados foi utilizado um questionário fechado de acordo com a escala Likert. No geral, o estudo mostrou uma série de vantagens potenciais de usar um diário digital na escola para facilitar as tarefas administrativas. Além disso, os resultados do estudo mostram que o professor e os professores da turma ficaram muito satisfeitos com a integração do diário eletrônico para concluir com sucesso as tarefas estatísticas calculadas automaticamente a partir do diário eletrônico.

**Palavras-chave:** Diário eletrônico, e-diário, gestão, escola

**Resumen**

Este estudio investigó los efectos del uso de un diario digital para facilitar el cálculo de estadísticas administrativas por parte de maestros y cuidadores de aula. El propósito de este estudio fue explorar el uso de un diario electrónico (e-diary) para ayudar a los maestros y cuidadores del aula a completar con éxito el trabajo administrativo relacionado con completar el diario escolar. Se utilizó un diseño cuantitativo para obtener datos de los docentes y tutorías en el aula a través de cuestionarios. La muestra incluirá 12 profesores de primaria 0-5 y 8 profesores de secundaria inferior 6-9. Para la recolección de datos se utilizó un cuestionario cerrado según la escala de Likert. En general, el estudio mostró una serie de ventajas potenciales de usar un diario digital en la escuela para facilitar las tareas administrativas. Además, los resultados del estudio muestran que el profesor y los profesores de clase estaban muy satisfechos con la integración del diario electrónico para completar con éxito las tareas estadísticas calculadas automáticamente desde el diario electrónico.

**Palabras clave:** Agenda electrónica, e-diary, gestión, escuela

## 1. Introduction

In recent years, technology has played a more central role in schools, with a range of digital devices, namely computers, laptops, and tablets being used in educational contexts. The modern way of doing work in our school also means the digitalization of the school administration. Fortunately, we are living in a more technologically advanced time (Jeremiah & Mtebe, 2018). The integration of Information and Communication Technology (ICT) and more specifically the use of programs is showing that if used skillfully, they can help overcome many of the barriers posed in traditional schools. It is also making them realize the great effort it takes to operate multiple systems for specific tasks, thus making them open to exploring a more sophisticated and efficient approach to digitalization. One of the reasons for this, the e-diary service however allows automation of administrative processes, reduces the use of paper documents, optimizes the working time, and implies a general turning point in terms of efficiency in school management. The e-diary service includes a different set of tools, each of which implies a different level of integration of stakeholders in and out of school (Hendricks, 2020).

A school diary is a communication tool created to promote communication between teachers, class tutors, school administration and parents' information about students. On the other hand, the use of an electronic diary (e-diary) significantly helps the school administration, not only the school principal, but also the teachers and classrooms caregivers that deal with filling in the statistics in the diary. The e-diary replaces all activities related to school administration. While, in a traditional diary it records the hours, successes, and absences manually, the e-diary offers predefined services which are automatically verified and calculated by the program. Compared to the traditional administration approach, electronic access is significantly faster, so teachers and classrooms caregivers may spend more time working with students and planning teaching activities than focusing on the formal side of completing the diary (Hallett, 2017).

The electronic diary (Figure 1) developed for the first time for our school aimed at addressing the problems encountered in the use of printed diaries for the calculation of statistics. It has always been a problem to use a school diary for administrative work management due to irregularities and inconsistencies related to its completion. These include, but are not limited to, incorrect placement or loss of recorded information and failure to meet set objectives.



**SHFMU "HERONJTË E LUMËS" - VËRMICË**

**SUKSESI I PËRGJITHSHËM I NXËNËSVE**

| PERIUDHA E PARË | | M | F | Gjith | % |
|---|---|---|---|---|---|
| **Suksesi pozitiv** | Shkëlqyeshëm | 2 | 2 | 4 | 20.00 |
| | Shumë mirë | 2 | 2 | 4 | 20.00 |
| | Mirë | 2 | 2 | 4 | 20.00 |
| | Mjaftueshëm | 2 | 2 | 4 | 20.00 |
| | Gjithsej me nota pozitive | 8 | 8 | 16 | 80.00 |
| **Suksesi negativ** | Me një të dobët | 0 | 0 | 0 | 0.00 |
| | Me dy të dobët | 0 | 0 | 0 | 0.00 |
| | Me tri e më shumë | 2 | 2 | 4 | 20.00 |
| | Gjithsej me nota negative | 2 | 2 | 4 | 20.00 |

| PERIUDHA E DYTË | | M | F | Gjith | % |
|---|---|---|---|---|---|
| **Suksesi pozitiv** | Shkëlqyeshëm | 2 | 2 | 4 | 20.00 |
| | Shumë mirë | 2 | 2 | 4 | 20.00 |
| | Mirë | 2 | 2 | 4 | 20.00 |
| | Mjaftueshëm | 2 | 2 | 4 | 20.00 |
| | Gjithsej me nota pozitive | 8 | 8 | 16 | 80.00 |
| **Suksesi negativ** | Me një të dobët | 0 | 0 | 0 | 0.00 |
| | Me dy të dobët | 0 | 0 | 0 | 0.00 |
| | Me tri e më shumë | 2 | 2 | 4 | 20.00 |
| | Gjithsej me nota negative | 2 | 2 | 4 | 20.00 |

**Figure 1.** Automatic calculations from the electronic diary.

Thus, the system was developed to provide a convenient solution to these irregularities and to help teachers and classrooms caregivers manage the information collected in an easy, fast, secure and accurate way. Its functions include, among many other things, the ability to allow teachers, and classrooms caregivers to enroll their students, their success, their shortcomings, and many additional options. Also, this system can finally print the student success report, which can also be distributed electronically to each student of this school. Above is an e-diary module that automatically calculates the overall success of students, dividing by success and gender for

students in a class.

## 2. Purpose of Study

The purpose of this study was to explore the use of an electronic diary (e-diary) in supporting teachers and classrooms caregivers to successfully complete administrative work related to completing the school diary. Also, the other purpose of this study is to describe the opinions of teachers and class teachers regarding the use of the e-diary compared to the manual completion of the school diary. Also, as the final goal of the study is to present the advantages and disadvantages of the experience of using the electronic diary from the common practice of the selected sample.

## 3. Literature Review

Technological advances and modern IT technologies are penetrating more and more into our lives. Fortunately, most of them have been created to greatly simplify and facilitate our existence. One such invention in the field of education is the electronic diary. The electronic diary is analogous to a conventional school diary. Such a service enables teachers and the school administration to be ready at any time to provide information on the progress of their students' engagement. In addition to grades, the electronic diary contains all the necessary information for the student (Proekt, 2021).

As an example of the electronic diary Moscow e-School we can mention that it is helping the administration of a school to manage the educational process, to specify the periods of progress and the forms of certification. The solution automatically generates student progress reports. The integration of different information systems throughout the city allows the electronic diary to display the entire biography of a student in his or her online account. Teachers can form a calendar and thematic plan and create lesson plans, assign content to required lessons, link them to textbooks and lesson scenarios, perform an intermediate certification. Parents can use the diary to get information about their children's progress and results (Mesh, 2021).

The article published by Amulya, Sushma and Kavya (2017) emphasizes that modern information and communication technologies integrated in e-Government services can respond more effectively to the educational needs of users. The conceptual model of lifelong learning, proposed in this paper and the electronic diary created to implement the approach to support education, can be applied to the basis of administrative services via the Internet, provided by the national portal e-Government (Amulya, Sushma, Sushma, & Kavya, 2017).

The fact that schools are interested in submitting electronic documents is confirmed by the number of visitors to the schools.by website. In one yes there are up to 400,000 clicks. However, out of 1,600 registered schools, only 35 implemented electronic documents. Some registered simply out of interest and to use the site within the school. Artemeva's study (2015) which states that teachers are intellectual professionals with higher education and cites a Minsk high school where over 40 teachers use the system, as they have learned it without difficulty. In this particular school, diaries and paper records are already seen as old-fashioned (Artemeva, 2015).

The traditional paper school diary has undergone a technological evolution at a Goldfields school in an effort to keep students organized in their final years of schooling (Verhagen, 2019). The study by Jeremiah and Mtebe (2018) found that the majority of respondents (96.7% of teachers) indicated that the digital diary was a useful tool as it enabled them to track student progress through smartphones (Jeremiah & Mtebe, 2018).

## 4. Materials and Methods

The research used the quantitative model. A quantitative design was used to obtain data from teachers and classrooms caregivers through questionnaires. Quantitative research methods emphasize objective measurements and statistical, mathematical, or numerical analysis of data collected through surveys, questionnaires, and surveys, or by manipulating pre-existing statistical data using computational techniques (Creswell, 2013). Therefore, the method used for this research aimed to determine the relationship between the use of an electronic diary and on the other hand to understand the opinions of respondents about the help of e-diary in school administration.

*Participants*

The study was conducted in the elementary and lower secondary school "Heronjtë e Lumës" in the village of Vermica in the municipality of Prizren in the Republic of Kosovo. The school has a total of three separate physical facilities, one of the schools is in Vërmicë, Shkozë, and Dobrushtë, with a total of 30 teachers. The population for this research is represented by all school teachers. The selected sample will be represented by the teachers and classrooms caregivers who have the task of completing the school diary. The sample will include 12 elementary school teachers 0-5 and 8 lower secondary teachers 6-9. The sample selected had a homogeneity in terms of gender, age, experience, and knowledge of using information and communication technology.

*Research question*

1. How satisfied were the teachers and classrooms caregivers with the e-diary integration?

2. What were the opinions of teachers and classrooms caregivers after using the electronic diary in administrative work?

3. What were the advantages and disadvantages of using the electronic diary in relation to completing the school diary?

*Hypothesis*

H1: Teachers and classrooms caregivers have maximum satisfaction in integrating the e-diary for calculating statistics.

H2: Teachers and classrooms caregivers prefer to use the electronic diary more than the traditional school diary.

H3: There is a stylistically significant correlation when using the e-diary and the ease of completing the school diary.

*Data collection*

The surveys were conducted with a group of teachers (n = 12) and classrooms caregivers (n = 8). The experiences of teachers and classrooms caregivers for the electronic diary were investigated through a survey sent online after they applied for this school year. A closed-ended questionnaire according to the Likert scale was used for data collection. Data entry was an ongoing process undertaken during data collection. This was to ensure the quality and reliability of the data. Quantitative data collected from the questionnaires generated by the system were imported into the SPSS program for analysis. The analysis was undertaken by calculating the necessary statistics such as means, frequencies and percentages, as well as in some cases the Pearson t-test and correlation. From the usual answers the topics within the answers were identified, then the results were interpreted and the explanation was made to give the meaning of the results of the questionnaire.

## 5. Results

We are analyzing the results from the questionnaire in this section by grouping according to the answers and opinions of teachers and class teachers after using the electronic diary in administrative work. The research was attended by 20 respondents, ranging from elementary school to lower secondary school, where teachers and classrooms caregivers had many years of work experience in completing the school diary manually. This was the best way for the respondents to understand how much the electronic diary helped in facilitating the statistics for completing the school diary.

According to the results we are noticing that we have teachers and classrooms caregivers with basic knowledge of technology used by 15%, average knowledge by 65%, and with advanced knowledge of technology used by 20%. This suggests that the level of knowledge of the respondents was average for the use of information and communication technology. These results may reflect that even if they do not have a good knowledge of technology use, how much an electronic diary can help them. This question and many other questions in this research will be answered as follows.

To the first question how satisfied are you with our school's diary, the results appear as the table below:

**Table 1.** How satisfied are you with our school's electronic diary?

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Agree | 8 | 40.0 | 40.0 | 40.0 |
| | Strongly Agree | 12 | 60.0 | 60.0 | 100.0 |
| | Total | 20 | 100.0 | 100.0 | |

From the results of table 1, we are noticing that 40% of the teachers and classrooms caregivers are very very satisfied with the electronic diary of our school, and 60% of them are also very satisfied with the e-diary. These results are showing that teachers and classrooms caregivers are satisfied with the integration of the electronic diary in the school.

Regarding the second question about the advantages of the electronic diary, about 90% of the respondents emphasized the advantage of accurate calculation of results, 75% easy access and automation of administrative processes, 85% reduction of the use of paper documents and 65% of them stressed optimizes working time. Whereas, regarding the third question about the disadvantages of the electronic diary, we notice that 22.2% emphasize the difficulty of use, 11.1% data loss, 11.1% data misuse, and 77.8% privacy of data use.

From the respondents' answers to the fourth question about the preferences of using more e-diary compared to the traditional school diary, the results show that the average is 4.75 and the standard deviation of .44, which indicates that teachers and classrooms caregivers prefer it more. use the electronic diary rather than the school diary.

The fifth question aimed to understand how much the electronic diary helped the respondents to complete the school diary. The results show that 25%, i.e.,75% of respondents agree that the e-diary helped them to complete the school diary**.**

We are analysing the answers (Table 2) to the sixth question in the table below:

**Table 2.** Technological knowledge and e-diary integration

| | | The integration of the e-diary in our school facilitated my work for calculating statistics | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Strongly Disagree | | Disagree | | Undecided | | Agree | | Strongly Agree | |
| | | Count | Row N % | Count | Row N % | Count | Row N % | Count | Row N % | Count | Row N % |
| Technological knowledge: | Basic | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 2 | 66.7% | 1 | 33.3% |
| | Average | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 2 | 15.4% | 11 | 84.6% |
| | Advanced | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 1 | 25.0% | 3 | 75.0% |

From the results of Table 2, we are noticing that almost all respondents, regardless of their knowledge of the use of information technology, agree that the integration of the e-diary in our school facilitated my work in calculating statistics.

Below we present the correlation between the use of the e-diary and the ease of completing the school diary.

The results from Table 3, show that there is a relationship of .430 and the significant sign is .058 which indicates that we have a moderate positive correlation between the use of the e-diary and the ease of completing the school diary.

**Table 3.** Correlations

| | | I prefer to use the e-diary more than the traditional school diary | The integration of the e-diary in our school facilitated my work for calculating statistics |
|---|---|---|---|
| I prefer to use the e-diary more than the traditional school diary | Pearson Correlation | 1 | .430 |
| | Sig. (2-tailed) | | .058 |
| | N | 20 | 20 |
| The integration of the e-diary in our school facilitated my work for calculating statistics | Pearson Correlation | .430 | 1 |
| | Sig. (2-tailed) | .058 | |
| | N | 20 | 20 |

Respondent's answers to the seventh question were 25% fully agree that the electronic diary is a need of the school administration and should be used further and 75% agree that the e-diary can be an administrative tool of the school.

And finally, they are presenting the respondents' perceptions about the electronic diary:
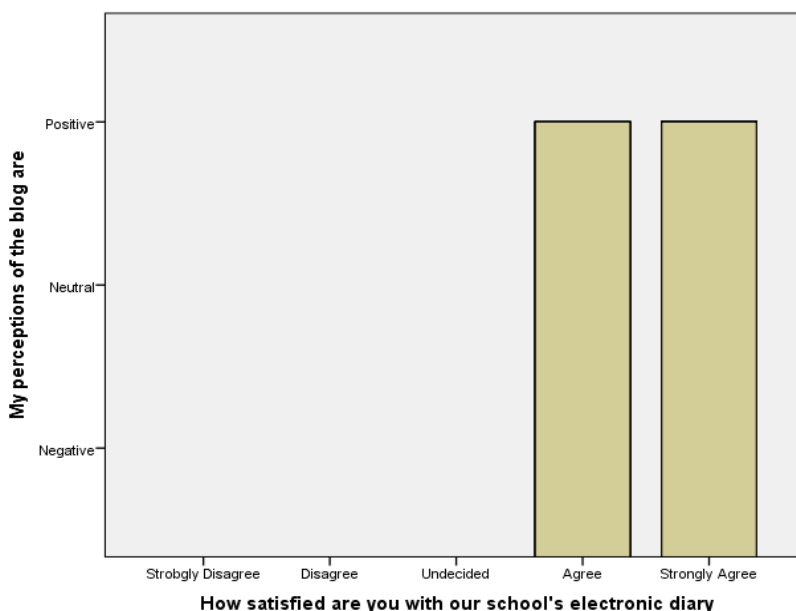


**Figure 2.** Perceptions of school e-diary

From the research results, we are noticing that all participants have positivee perceptions about the electronic diary. This is showing that teachers and classrooms caregivers have positive opinions and that the electronic diary is considered better than the physical school diary. E-diary users are showing that e-diary has helped to facilitate day-to-day operations and maintain student statistics electronically.

## 6. Discussion

The current study aimed to develop an electronic diary to increase the involvement of teachers and classrooms caregivers to help complete the school diary. So, the purpose of this study was to explore the use of an electronic diary (e-diary) in supporting teachers and class teachers to successfully complete administrative work related to completing the school diary.

Our research findings show that 40% of teachers and classrooms caregivers are extremely satisfied with our school's electronic diary and 60% of them are also very satisfied with the e-diary. From these results, we are seeing that respondents agree that the integration of the e-diary in our school facilitated the work of calculating statistics. From the above findings we can also give an answer to the first research question that teachers and classrooms caregivers were very satisfied with the integration of the e-diary.

Our research findings are consistent with research conducted in Hungary, where the implementation and use of digital diaries in high schools significantly facilitated administration and also allowed features missing from a paper-based diary (Gogh, Kovacs, & Sziladi, 2018). Also, the results of our study show that teachers and classrooms caregivers have positive opinions about the electronic diary. The results show that 100% of the respondents have positive opinions about the electronic diary. Therefore, from all this, we can answer the question that teachers and classrooms caregivers after using the electronic diary in administrative work have positive opinions.

According to the findings of our study, teachers and classrooms caregivers highlighted the advantages of the electronic diary, such as helping to accurately calculate results, easy access, automation of administrative processes, reducing the use of paper documents, and optimizing working time. However, teachers and classrooms caregivers also pointed out some disadvantages of the electronic diary, such as the difficulty of use, data loss, data misuse, and privacy of data usage. Therefore, from these results, we are providing answers to the third research question that the advantages and disadvantages of using the electronic diary in relation to completing the school diary are as described above.

Our findings show that the diary developed was successfully implemented and that respondents are poor and that it helped complete the school diary. Also, teachers and classrooms caregivers have the same opinion as Jeremiah and Mtebe (2018) who found that the majority of respondents (96.7% of teachers) indicated that the digital diary was a useful tool (Jeremiah & Mtebe, 2018). Therefore, from these findings, we are confirming the first hypothesis put forward those teachers and classrooms caregivers have maximum satisfaction in integrating the e-diary for calculating statistics.

Another important finding that emerged from this study was that our results show that the average is 4.75 and the standard deviation of .44, indicating that teachers and classrooms caregivers prefer to use the electronic diary rather than the school diary. So, these results are also supporting the study of Verhangen (2019) that after a survey found that most students no longer used school diaries, Eastern Goldfields College is applying a new electronic diary (Verhagen, 2019). Therefore, we can also confirm the hypothesis that teachers and classrooms caregivers prefer to use the electronic diary more than the traditional school diary.

From the results of table 3, we are noticing that we have a positive and moderate correlation of .430 between using more e-diary compared to the traditional school diary and integrating the e-diary in our school facilitated my work for calculating statistics. Therefore, from this result, we can confirm the last hypothesis by saying that there is a stylistically significant correlation between the use of the e-diary and the ease of completing the school diary.

## 7. Conclusions

The results showed an increase in situation awareness, that teachers and classrooms caregivers were very satisfied and had positive opinions on the integration of the e-diary. Without it, the research presents more advantages that the e-diary had compared to some of the disadvantages of using the electronic diary in relation to completing the school diary. So, the results of the study are showing that the teacher and the classrooms caregivers were very satisfied with the integration of the e-diary to successfully complete the statistical tasks calculated automatically from the electronic diary.

Overall, the study showed a number of potential advantages of using a digital diary at school to facilitate administrative tasks. The findings from this study provide a new understanding of how Information and Communication Technology can help improve school quality as well as enhance school administration activities. Hopefully, this research will provide evidence of how the electronic diary developed has been successfully implemented and has the potential to deliver the intended long-term benefit.

## 8. Acknowledgments

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