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Development and implementation of electronic journals in professional pre-university educational institutions

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Abstract. The relevance of the study is due to the need to improve the efficiency of educational processes through the use of modern information and communication technologies (ICT). The purpose of the study was to present ICT in the management of the learning process through the experience of developing and implementing electronic journals. The study was conducted using a mixed methodology, which included an analysis of existing learning management systems, a survey of users (teachers, students, parents), testing of the prototype of the developed system, and statistical processing of the collected data to assess its effectiveness. The implementation of the platform automates routine tasks, such as entering grades and generating reports, reducing time and resources. A comparison of electronic journals and traditional paper journals showed that electronic systems significantly reduce the time required to complete administrative tasks: entering grades and generating reports takes much less time when using interactive communication technologies, which reduces the administrative burden and allows more time to focus on the learning process. The results of the study showed high user satisfaction: teachers, administrators, students, and parents noted the convenience of the interface and the availability of real-time information, which contributes to effective monitoring of academic performance, attendance, and report generation. The results obtained can be used in professional higher education institutions to automate the recording of grades and attendance and provide students with access to educational materials, which will increase the efficiency of the educational process management and create the basis for the future development of electronic learning management systems, which can be an important step in the digitalisation of education in general

Keywords: information and communication technologies; college; digitalisation; automation of the educational process; monitoring of learning

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INTRODUCTION

The relevance of the present study is due to the growing need to create modern tools that can ensure effective management of the educational process in professional higher education institutions. In such institutions, where the learning process combines academic and practical elements, the role of electronic platforms is particularly important to ensure the harmonious functioning of the educational system. The introduction of electronic journals not only simplifies the administrative work of teachers but also increases the level of transparency and openness for

students and administration, providing access to up-to-date information in real time.

The modern education system is in the process of profound transformations caused by the active introduction of digital technologies that radically change approaches to the organisation of the educational process. Innovations in this area are aimed at improving the quality of educational services, creating flexible and adaptive learning environments, and optimising management processes. One of the biggest challenges remains the improvement of mechanisms for



collecting, processing and analysing learning data, which is critical for effective management of learning activities. Lack of transparency, manual duplication of data, and significant time spent on information processing are barriers that affect the productivity of teachers and the quality of the learning process in general. Information and communication technologies (ICTs) open up new perspectives in automating routine tasks such as entering grades, recording attendance or generating reports while simplifying access to data for all stakeholders in the educational process. However, their implementation is often accompanied by difficulties related to technical limitations, lack of standards, and methodological problems in integrating new solutions into existing systems.

One of the most important solutions in this area is the development and implementation of electronic journals, which can solve a number of systemic problems. In particular, this system helps to minimise duplication of data, reduce the time for preparing reports, and improve interaction between teachers, students, and administration. Thus, the introduction of ICT in the field of educational management is a requirement of the times and a prerequisite for ensuring the effectiveness of educational systems in the future. Research papers for the period 2020-2024 pay considerable attention to the role of ICT in education. D. Samborska *et al.* (2024) discussed the use of ICT in the educational process in their instructional materials for laboratory work. The materials present the basic principles of using ICT in laboratory work, which can increase the effectiveness of learning, in particular in the field of data processing and the use of software to solve practical problems. The authors emphasised the importance of digital tools in modern education, which facilitate the creation of interactive materials for students and make it easier to monitor their results. The role of ICTs and human capital in ensuring environmental sustainability in Latin America and the Caribbean is analysed in the work by Z. Ahmed *et al.* (2021). The study highlighted that ICT integration can have a positive impact on the environmental situation by reducing carbon emissions and increasing resource efficiency. The authors pointed out the need to develop human capital, as only through the competent use of digital technologies can long-term environmental benefits be achieved. The regression analysis showed that innovative ICT solutions, together with high-quality training, significantly reduce the environmental impact of production activities.

Strategies for improving the competitiveness of small and medium-sized enterprises through the use of ICT were analysed by A. Arjang *et al.* (2023). The authors highlighted the importance of digital technologies in business development, especially for SMEs in developing countries. The use of ICT allows businesses to optimise their operations and improve communication with customers and partners, which has a direct impact on economic performance and competitiveness. It is worth noting that G. Chisango *et al.* (2020) studied teachers' perceptions of ICT in the educational process in rural secondary schools in South

Africa. The authors note that teachers face numerous challenges, such as insufficient training and technical difficulties, which hinder the use of digital tools in classrooms. However, they also note positive changes in the quality of learning after the introduction of ICT.

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A glossary of terms related to ICT in education was created by V. Kirvas *et al.* (2023). This work is useful for teachers and students, as it provides a clear definition of the main concepts and terms related to the introduction of digital technologies in the educational process and helps to better navigate current educational trends. C. Dávila & I. Prieto (2024) studied the impact of digital communication technologies on parenting through the example of WhatsApp parenting groups in Chile. The authors analysed how digital technologies are changing the role of parents in the educational process and promoting greater interaction between parents and schools, which affects the overall atmosphere in the educational institution and support for students.

The use of ICTs by future teachers in the educational process of higher education institutions was studied by V. Rebenok & O. Torubara (2023). They found that the use of ICT in teaching helps to increase the effectiveness of learning, saves time on the preparation of materials and allows for better interaction with participants in the learning process. However, there is also a certain level of resistance from teachers who are not sufficiently prepared to use technology. Scientist A. Klimenko (2020) analysed the feasibility of introducing electronic diaries and journals into the educational process. The author explored the advantages and disadvantages of such technologies in the context of schools and higher education institutions. At the same time, the author emphasised the importance of digital tools for improving control over student and pupil performance. The impact of ICT on sustainable education was considered by W. Al-Rahmi *et al.* (2020). The authors explored how digital communications help to create sustainable learning environments where information is available to every participant in the process and also considered the potential of ICTs for the development of global education, especially in developing countries. S. Zhang *et al.* (2022) studied the environmental impact of ICTs, in particular their role in

the development of education in developing countries. The authors focused on how ICTs can contribute to sustainable development by reducing emissions and optimising resource use in educational institutions.

In summary, the studies demonstrate the significant potential of ICTs in modernising the educational process, developing communications and sustainability, but also emphasise the need to overcome technical, methodological and social challenges to maximise the use of these technologies.

The purpose of the study was to highlight the use of ICT in the organisation of the educational process on the example of the development and implementation of electronic journals. The main objectives of the study included identifying the advantages and disadvantages of using electronic journals, assessing the effectiveness of automation of the educational process and the prospects for integrating such systems into the broader context of digitalisation of education, creating a plan for the full implementation of the system in the second semester.

MATERIALS AND METHODS

The study was conducted at the Myrhorod Mykola Hohol Vocational College of National University “Yuri Kondratyuk Poltava Polytechnic” during the first semester of the academic year 2024-2025. The testing of the HappyCollege. Online system was aimed at evaluating its effectiveness and identifying possible problems before full implementation in the second semester. A theoretical analysis was conducted for the following systems: E-Journal.UA, Single School and MySchool. The functionalities of these platforms, their impact on the automation of routine tasks, increasing the transparency of the educational process and improving communication between students were considered. The theoretical basis of the study is modern approaches to the use of ICT in education, in particular in the management of the educational process. To study the topic, we used methods of scientific cognition, including analysis, comparison, and systematisation of theoretical sources, as well as empirical methods such as observation, testing, and questionnaires.

During testing, teachers kept records in both traditional paper journals and an electronic system. The system automatically collected data on students' attendance, grades and performance, which significantly reduced the time required to enter and process this information compared to traditional methods. This also made it possible to monitor the dynamics of student performance, reducing the risk of errors in the data entered. Regular monitoring of user performance was carried out through surveys and questionnaires, where teachers could express their opinions on the system. This feedback became the basis for correcting the identified problems and improving the user experience. It is worth noting that the surveys and questionnaires were conducted in compliance with ethical standards, including the voluntary participation of respondents, anonymity, and confidentiality of the data obtained. Participants were informed about the purpose of the study and had the right to refuse to participate or skip any question. The questions

were formulated neutrally so as not to influence the answers, guaranteeing the objectivity and impartiality of the results. The evaluation of HappyCollege. Online's effectiveness also included a study of the system's impact on student performance, which made it possible to determine the advantages of the electronic system in terms of data processing and overall facilitation of the work of teachers. An important aspect was also ensuring the platform's technical compatibility with various devices and compliance with cybersecurity standards, which confirms its ability to store and protect users' personal data.

During the test, teachers kept records in both traditional paper journals and the electronic system at the same time. The system automatically collected data on attendance, grades, and student performance. This also made it possible to quickly track the dynamics of student performance, reducing the risk of errors in the data entered. A statistical analysis of the collected data was carried out, which made it possible to compare the effectiveness of paper and electronic journals in terms of various indicators, such as the accuracy of the data entered, the time spent on entering information, and the ease of use of the system.

RESULTS

The use of electronic journals in educational institutions of Ukraine

In Ukraine, the introduction of electronic journals is becoming one of the key areas of the digitalisation of education. Such systems help to solve urgent problems of educational process management, increase transparency of educational activities, facilitate administrative work and ensure interactivity in the interaction between teachers, students, parents, and administration. Digital journals allow implementing approaches aimed at optimizing the educational process, integrating with modern technologies and ensuring a high level of accessibility of educational information. An analysis of the experience of implementing electronic journals in Ukraine reveals key aspects of their effectiveness and prospects for further development.

Ukrainian e-journals such as E-Journal.UA, Single School and MySchool have already proven their effectiveness in educational institutions of various levels. The E-Journal.UA platform is focused on automating the processes of recording academic performance and attendance. It allows teachers to enter data on students' grades in a convenient format, generate reports, and get quick access to statistics. Students and their parents can view their progress via mobile applications or a web portal in real time. This approach significantly reduces the time spent on routine administrative tasks and helps to increase the level of engagement of all participants in the educational process.

The national platform “Single School” integrates all key aspects of the educational process, including class scheduling, journaling, progress monitoring and extracurricular activities. In addition, the platform provides analytical tools for generating reports based on learning data, allowing school administrators to make quick decisions. The system

also supports interactive communication between teachers, students and parents, which creates an effective environment for monitoring and supporting educational processes. The system gained particular popularity during the COVID-19 pandemic, when distance learning required schools to have modern digital solutions. MySchool offers a modular approach to managing the educational process. It allows educational institutions to flexibly adapt the functionality to their needs, including integration with library systems, student payment modules, and even adding functions for extracurricular activities. The system is also synchronised with state standards, which makes it easier to keep track of progress in accordance with the regulatory requirements of the Ministry of Education and Science of Ukraine. An important aspect of MySchool is the availability of teaching materials and assessments in digital format, which allows teachers and students to interact regardless of location.

An important component of the successful implementation of electronic journals is staff training. For many teachers, especially older ones, adapting to digital tools can be a challenge. However, providing training and instructions on how to use the platforms helps to ensure the successful adoption of new technologies. In this respect, systems such as the One School and MySchool provide user-friendly and intuitive interfaces that simplify the integration process for new users. In general, the introduction of electronic journals in Ukraine creates numerous benefits for all participants in the educational process. The main results include the automation of routine administrative tasks, increased transparency of data on student performance and attendance, reduced administrative burden on teachers and administrators, and improved communication between teachers, students, and parents. These systems form the basis for further digitalisation of education and the integration of analytical technologies such as artificial intelligence to personalise the learning process and predict student performance.

In the future, Ukrainian e-journals can be improved by integrating with distance learning platforms such as Moodle, expanding mobile functionality for better access to data, and introducing tools for analysing large amounts of educational data. It is also important to ensure equal access to these technologies for all educational institutions, including schools in rural and remote areas where there may be limited infrastructure or low levels of technical training. Thus, e-journals in Ukraine are becoming an important step towards the modernisation of education, providing tools for effective management of the learning process, integration of modern technologies and creation of a favourable environment for learning and development.

Description of the HappyCollege.

Online system (main system functions)

The HappyCollege.Online system is a digital platform for automating and organising the educational process in professional higher education institutions. One of the main functions of the system is to create and manage class

schedules. This function allows the administration of an educational institution to customise the timetable for different groups of students and courses. Using the system, the administration is able to take into account all the features of the course: the number of teachers, the availability of teaching materials, and the ability to make changes quickly in case of unforeseen circumstances (for example, replacing a teacher, postponing or cancelling classes). Thanks to this flexibility, the system helps to avoid duplication of classes, reduces the likelihood of confusion in the schedule and allows making the most efficient use of the institution's resources, including premises, equipment and teaching staff.

The HappyCollege.Online system supports the maintenance of personal profiles for each student, where all the necessary data is stored, ranging from personal information (last name, first name, patronymic, contact details, date of birth) to academic performance, attendance history and other important aspects. This function not only improves the organisation of student records but also reduces the likelihood of human errors associated with paper records. Teachers and administrators can easily make changes to this data, which guarantees the relevance and accuracy of the information. For example, if a student changes groups, adds a new grade, or changes contact details, all changes can be made in real time and are automatically synchronised across all sections of the platform, including timetables and reporting. Centralised access to student profiles provides the ability to monitor and verify data for different categories of users: administration, teachers, students, and their parents. This approach reduces the administrative burden on the staff of the educational institution and improves interaction between all participants in the educational process.

The system allows teachers not only to enter grades for various forms of control (quizzes, labs, tests, exams), but also to keep track of student attendance. All data is automatically updated and displayed in real time in students' personal profiles. This allows students to have constant access to information about their progress, which encourages them to adjust their learning activities if necessary. Grades can be entered for different types of activities and outcomes, and can automatically take into account different levels of course difficulty, which ensures accurate assessment of student progress. Another important feature is the attendance management function, which allows teachers to monitor student attendance. The HappyCollege.Online system has a mobile version that allows one to access one's information (grades, schedules, notifications, reports) anytime and from anywhere. It also allows teachers to make changes or adjustments quickly without being in the classroom. For example, they can enter grades or notifications of schedule changes, which provides convenience for all parties involved.

Teachers and administrators can use the system to combine students from different areas of study into general education courses, which allows them to organise learning more efficiently and reduce duplication of classes. This function significantly reduces the administrative burden on the staff of the educational institution, as groups are formed

automatically based on certain criteria (timetable, availability of teachers, common interests). Grouping allows for optimising the use of educational resources (classrooms, equipment, teaching materials) and improving interaction between students and teachers, as students from different fields can share their experience and knowledge within the framework of common topics.

The system automatically calculates students' grade point averages, taking into account all the grades entered for various activities (quizzes, tests, labs, exams). Since all data is stored electronically, this process takes a minimum of time and eliminates human errors that can occur during manual calculation. It is worth noting that the system generates reports on student performance, which can be used for internal monitoring or sent to students and their parents. The reports can be adapted for different purposes, allowing not only to assess students' academic performance but also to monitor their progress in specific aspects of their academic activities. The implementation of HappyCollege.Online is a significant step forward for educational institutions seeking to optimise administrative processes and improve accessibility and transparency of education for students, teachers, and parents. The automation of routine tasks, prompt access to up-to-date information, and increased efficiency of the educational process make this system an

indispensable tool for modern educational institutions.

System testing at Myrhorod Vocational College

Myrhorod Vocational College tested the HappyCollege.Online system during the first semester of the 2024-2025 academic year to evaluate its effectiveness and identify possible problems before full implementation in the second semester. During the test, teachers simultaneously used both traditional paper journals and the new electronic system to keep track of students.

Table 1 shows a comparison of several key criteria of how teachers worked with paper and electronic journals during the HappyCollege.Online testing. These indicators were determined based on observations of the work of teachers and students during the first semester, taking into account the number of grades entered, attendance and reports, as well as user feedback. The comparison shows the advantages of electronic journals in terms of time and accuracy and also makes it possible to understand how much the administrative burden is reduced when using automated systems.

Electronic journals, such as HappyCollege.Online, significantly reduce the time required to perform basic accounting tasks in educational institutions, making the whole process more efficient, convenient and resource-saving (Table 2).

Table 1. Comparison of working with paper and electronic journals

Criterion	Paper journal	Electronic journal
Data entry time	More time (10 to 15 minutes per student)	Faster (automatic calculation and filling)
Data accuracy	Possibility of errors due to manual input	Higher accuracy through automation
Ease of use	More complicated, requires physical access to the log	Easy access via any device
Monitoring progress	It is required to manually calculate grade point averages and track attendance	Automatic updates, access to real-time data
Resource costs	Required costs for paper, pens, document storage	Minimum costs (electronic form)
Data accessibility for students and parents	Limited access, only after requesting from the teacher	24/7 access via the platform for all participants in the learning process
Administrative burden	High, requires additional time to process and store information	Low, thanks to automatic data processing

Source: compiled by the author

Table 2. Time to complete basic tasks

Task	Paper journals	Electronic journals (HappyCollege.Online)
Entering grades for the semester	3 hours per teacher	1 hour per teacher
Generating progress reports	1 hour per group	20 minutes per group
Attendance check	7 minutes per group	5 minutes per group

Source: compiled by the author

Full implementation plan in the second semester

In the second semester, the full implementation of HappyCollege.Online is planned, which involves a comprehensive assessment and correction of test results and improvement of the platform. The results will be evaluated based on comments from teachers and administration, which will allow us to identify problems in a timely manner and make the necessary changes to the interface. This may include improv-

ing the intuitiveness of the system and adding new features to enhance its usability. Based on the feedback received, the issue of additional training for teachers will be decided to ensure their maximum efficiency in using the system.

An important step will be the full transition to electronic journals for keeping records and assessing student performance. This will mean that all teachers will use the platform to exercise full control over the learning process:

from tests and quizzes to laboratory work and other activities. Automation of all these processes will significantly reduce the time teachers spend on data entry and reduce the likelihood of errors. It is also worth noting that this will provide more transparent access to information for students and parents, which will help to better control the learning process.

Another important step is to increase technical support for the system. Increasing the number of IT specialists to deal with timely technical failures is necessary to ensure the stability of the platform, which is especially important in the context of a large-scale implementation. Support will also need to be provided to ensure that students can use the platform seamlessly from any device, whether it is a computer or mobile phone, allowing them to access their grades, timetables, and learning materials anytime and anywhere. The expansion of mobile access is another step in the system's improvement plan. Integration of the platform with other educational systems, such as library or student payment systems, will create a unified educational ecosystem that will significantly improve the user experience. Students will be able to easily access all the necessary educational resources and services through one platform, which is more convenient and faster than using several services.

Last but not least, the system will be continuously monitored and feedback from all users – students, teachers, and administration – will be collected on a regular basis. This will ensure timely response to any problems or needs, process adjustments and system improvements. Only through active user involvement can we ensure a high level of satisfaction and efficiency from the implementation of the platform. Testing of HappyCollege.Online at Myrhorod Vocational College revealed the platform's capabilities to improve the management of the learning process and optimise the work of teachers. After correcting the comments and improving technical support, the system will be fully implemented in the second semester, which will optimise student performance and attendance, reduce administrative burden and increase transparency of the educational process. The HappyCollege.Online system solves several key problems faced by teachers and administrators of educational institutions in the process of managing the educational process. One of the main challenges is to simplify the work of teachers. Previously, they spent a significant amount of time maintaining paper journals, entering grades, recording attendance and generating reports. The system automates these processes, which significantly reduces the time required to perform routine tasks and allows teachers to focus more on the learning process and interaction with students.

The use of mobile devices is another challenge that the system addresses. It is fully adapted to work on mobile phones and tablets, allowing teachers to access journals, assessments, and other learning materials anytime and from anywhere. This makes the system accessible to all participants in the learning process, no matter where they are. Optimisation of work with combined groups is another

important advantage. Previously, teachers had to keep separate records for each group, which led to duplication of work, especially for general education subjects taught by several groups. The system automatically combines these groups for joint journaling, which allows for effective resource planning, reduces administrative burden and provides convenience for teachers. Automation of grade calculation and report generation greatly facilitates the work of teachers and administrators. The system independently calculates students' average grades based on the entered grades and generates progress reports. This not only reduces the number of errors, but also allows quickly getting all the necessary information, which is essential for monitoring and planning the educational process.

One of the main prospects for the development of the system is the development of additional modules for reporting and log archives, which will create a centralised system for storing all logs and reports for previous years, which will simplify access to historical data and provide better control over long-term learning outcomes. It will also help to store all information electronically, which will reduce the need for physical archiving of documents. Another prospect is to provide students with access to their grades through the system in real time, which will help to increase their motivation and responsibility for their performance. Parents will be able to check their children's progress at any time, which will also increase the transparency and effectiveness of interaction between students, their parents, and teachers.

ICTs play a key role in optimising the learning process, particularly in higher education institutions. The use of ICTs allows for the integration of various digital platforms for managing the learning process, which significantly improves efficiency and convenience for both teachers and students. The integration of digital tools for scheduling, record-keeping, assessment and progress monitoring allows for the automation of many routine tasks, such as entering grades, calculating grade point averages and generating reports. This reduces the workload of teachers and administrators and allows them to focus on more important aspects of the learning process, such as interacting with students, developing teaching materials and delivering lectures.

Increased accessibility of learning resources is another important benefit of ICT. Students can access electronic materials, video lectures, tests, and assignments from anywhere and at any time. This allows them to organise their learning more flexibly and efficiently and ensures equal opportunities for all students regardless of their location. Mobile technologies also contribute significantly to optimising the learning process. Using mobile applications to access learning materials, grades, schedules, and other system functions makes learning more accessible. Students can get important information on the go, which contributes to a more efficient use of time and better organisation of the learning process. In general, ICTs help to improve communication, reduce administrative burdens and increase the availability of learning resources, making the learning

process more efficient and adapted to the needs of modern students and teachers.

DISCUSSION

The findings of the study on the introduction of electronic journals in professional higher education institutions provide important conclusions on improving the efficiency of learning management, reducing administrative burden, increasing transparency of learning activities and improving access to learning materials. The importance of these results lies in the fact that they confirm the effectiveness of using ICTs to optimise routine administrative processes, such as grading, attendance and reporting, which in turn allows for more time to focus on teaching students.

Information technology in education has become a powerful tool for transforming learning processes, as indicated by D. Hawkridge (2022). The study showed that electronic platforms greatly simplify the management of the learning process, reducing time spent on routine tasks and improving the availability of information for students and teachers. This is in line with the results of the study, which showed how automation of routine tasks, such as entering grades and attendance, improves the efficiency of administrative work and reduces the workload of teachers. O. Khmarna (2023) emphasises the importance of introducing ICT into the learning process and managing learning processes, increasing the efficiency of educational services. J. Silva *et al.* (2024) investigate the factors that influence students' use of ICT for educational purposes. The study showed that students find it much more convenient to work with electronic journals, which allows them to quickly receive up-to-date data on their grades and attendance. This coincides with the results of testing the HappyCollege.Online system, where students noted the convenience and accessibility of information.

The use of ICTs in the training of psychological counsellors, emphasising the importance of integrating digital technologies to improve learning processes in specialised disciplines, was studied by Ş.G. Zeren (2024). The study noted that the introduction of ICT in educational systems significantly improves the effectiveness and accessibility of learning materials for students. This study also recorded an increase in the availability of learning resources and the convenience of their use, which correlates with the scientist's results on the positive impact of ICT on learning.

T. Quraishi *et al.* (2024) studied the improvement of educational systems through ICT, which can significantly increase the efficiency of learning processes. The study confirmed that electronic journals automate routine processes, improving access to information and reducing the burden on administration. This is consistent with the author's conclusions about the positive impact of ICTs on improving the efficiency of educational processes. V. Spivachuk & M. Ikonnikova (2022) note that modern ICTs are being actively implemented in the educational processes of higher education institutions, providing interactivity and automation of routine tasks. This study, as well as the work of other

researchers, points to the importance of automating the entry of grades and reporting, which increases the efficiency of teachers and administrators. The impact of the classroom environment, teacher competence, and ICT resources on student engagement and academic achievement was studied by J. Hanaysha *et al.* (2023). The results of the study showed that e-platforms such as HappyCollege.Online simplify the monitoring of student performance and contribute to increasing the level of student engagement in learning due to the availability and efficiency of information. The issue of the need to introduce ICT in education, emphasising its importance for the modernisation of educational processes, was studied by E. Hrytsenko (2023). This study also focuses on the need to integrate digital technologies to ensure the effectiveness of the learning process, which confirms the importance of ICT mentioned in the researcher's work.

The impact of ICT development and educational changes on sustainable environmental development in economic blocs such as BRICS, MINT and G7 was analysed by B.A. Gyamfi *et al.* (2023). This is consistent with the study's findings that ICTs can help reduce environmental impact, including by reducing the use of paper materials. The study notes that e-journals reduce the use of paper and reduce the environmental impact, which coincides with the researcher's findings on the environmental benefits of ICT in education. S. Mirsharapovna *et al.* (2022) examined the advantages and disadvantages of using computer technology in education, emphasising that it can improve learning efficiency but also has risks associated with technical problems. The study found that, despite technical failures, the overall system significantly improves the process of entering grades and attendance, which is consistent with the results of this study. Z. Shatri (2020) discusses both the advantages and disadvantages of using ICT in education, noting the reduction in student stress due to the availability of real-time. The results of the HappyCollege.Online test support the idea that stress is reduced through access to up-to-date information, although some technical difficulties have also been identified that need to be addressed. but also noting potential difficulties due to technological barriers. The results of the HappyCollege.Online test support the idea that stress is reduced through access to up-to-date information, although some technical difficulties have also been identified that need to be addressed.

The benefits of mobile technologies for learning, noting that they provide access to materials anytime and from anywhere, were studied by S. Criollo-C *et al.* (2021). In the study, a mobile version of the platform was implemented, allowing students and teachers to access learning materials, grades, and schedules at any time, which is in line with the scientist's conclusions about the benefits of mobile learning. S.O. Zamko (2021) considers the benefits of using electronic diaries and journals in education, in particular in the context of computer science lessons, where electronic journals provide more effective control over student performance. The results of the study confirm that electronic journals greatly simplify the process of entering grades

and reports, which reduces the burden on teachers and administrators, meeting the needs of modern education. K. Ratheeswari (2018) emphasises the importance of ICT in education to optimise learning processes. In the study, automation of data entry and report generation improves the efficiency of teachers, which is in line with K. Ratheeswari's findings on optimising learning through ICT.

The integration of electronic resources in the library environment of higher education institutions, in particular the benefits and challenges associated with the introduction of ICT, is studied by I. Bondar (2023). The study findings indicate that the integration of electronic systems greatly facilitates access to learning materials, reducing the burden on the administration and ensuring more efficient work organisation. This coincides with the scientist's results on improving access to information through electronic resources. S. Desai (2010) emphasises the importance of ICT in education to improve learning and teaching processes, which is supported by the results obtained, as the HappyCollege. Online platform automates routine tasks such as entering grades and attendance, allowing students to focus on more important aspects of the learning process. J. Anderson *et al.* (2002) examined the role of ICT in schools and development programs for teachers. The study focused on teacher training for effective use of the e-journal platform. This correlates with the scientist's ideas about the need to prepare teachers to use new technologies in the educational process.

The introduction of ICTs in education and the importance of their implementation for effective learning is considered by D. Moursund (2005). This study notes that the introduction of electronic journals automates many administrative processes, which makes the work of teachers and administrators easier, responding to the needs voiced in the work of D. Moursund. Automation of grades and attendance are key aspects that increase the efficiency of learning, which coincides with the scientist's ideas on creating systems to optimise the educational process. In summary, the study confirms the importance and effectiveness of ICT, in particular electronic journals, in managing the learning process, which reduces administrative burden and increases the availability and transparency of information. However, to achieve the maximum effect, it is important to take into account technical and social aspects, as well as to continue working on improving the functionality of such systems.

CONCLUSIONS

The results of the study show that the introduction of electronic journals, in particular the HappyCollege.Online system, is a key tool for improving the efficiency of managing the learning process in higher education institutions. The system has significantly reduced the time spent on routine tasks: entering grades has been reduced from 3 hours per teacher to 1 hour, and generating progress reports has been reduced from 1 hour to 20 minutes per group. The time required to check attendance has also been reduced from 7 minutes to 5 minutes. This demonstrates the high performance of the system and its ability to optimise the daily work of teachers and administration.

Electronic journals have helped to increase the transparency of interaction between all participants in the educational process. Teachers noted the ease of automating grades and generating reports, while the administration emphasised the convenience of monitoring academic performance and attendance. The level of user satisfaction, according to the surveys, was high (5/5), which indicates a positive perception of new technologies. The results of the study showed that the introduction of electronic journals significantly increases the efficiency of administrative work in educational institutions, in particular through the automation of entering grades, attendance and generating reports. The use of such systems reduces the time required to perform routine tasks, improves data accuracy and reduces the likelihood of errors associated with manual input. Electronic systems have also been found to improve communication between all stakeholders in the educational process and increase the transparency and openness of the educational process. Further research could focus on the development of intelligent modules for predicting student performance and automating curriculum assessment. It is also important to study their impact on the motivation of participants in the process and the formation of a digital culture that will help improve the quality of educational services.

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CONFLICT OF INTEREST

None.

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Розробка та впровадження електронних журналів у фахових передвищих закладах освіти

Анотація. Актуальність дослідження обумовлена необхідністю підвищення ефективності освітніх процесів через застосування сучасних інформаційно-комунікаційних технологій (ІКТ). Метою дослідження було представити ІКТ в управлінні навчальним процесом через досвід розробки та впровадження електронних журналів. Дослідження проводилося з використанням змішаної методології, яка включала аналіз існуючих систем управління навчальними процесами, опитування користувачів (викладачів, студентів, батьків), тестування прототипу розробленої системи, а також статистичну обробку зібраних даних для оцінки її ефективності. Впровадження платформи автоматизує рутинні завдання, такі як введення оцінок і формування звітів, зменшуючи витрати часу й ресурсів. Порівняння електронних журналів і традиційних паперових показало, що електронні системи значно скорочують час на виконання адміністративних завдань: введення оцінок та формування звітів займає набагато менше часу при використанні інтерактивно-комунікаційних технологій, що знижує адміністративне навантаження та дає можливість більше зосереджуватись на навчальному процесі. Результати дослідження показали високу задоволеність користувачів: викладачі, адміністрація, студенти та батьки відзначили зручність інтерфейсу та доступність інформації в реальному часі, що сприяє ефективному моніторингу успішності, відвідуваності та створенню звітів. Отримані результати можуть бути використані в фахових передвищих навчальних закладах для автоматизації обліку оцінок, відвідуваності та забезпечення доступу студентів до навчальних матеріалів, що підвищить ефективність управління навчальним процесом, а також створюють підґрунтя для майбутнього розвитку систем електронного управління навчальним процесом, що може стати важливим кроком у цифровізації освіти в цілому

Ключові слова: інформаційно-комунікаційні технології; коледж; диджиталізація; автоматизація навчального процесу; моніторинг навчання