

# WEB SYSTEM FOR AUTOMATION AND DIGITALIZATION OF THE PROCESSES OF ORGANIZATION AND SUPPORT OF GRADUATE WORK DESIGN AT THE GRADUATING DEPARTMENT

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*The paper presents a developed web system for automation and digitalization of the graduate work design process. The proposed solution simplifies all stages of the process, and also allows you to monitor the progress of thesis design through an electronic journal, right up to the defense of thesis projects.*

## INTRODUCTION

From the point of view of organization and support, the process of designing graduate work (PDGW) is a rather complex and time-consuming task due to the presence of a large number of different stages and a large number of participants in this process, especially in departments that graduate a large number of students annually. Often, at various stages of organizing and maintaining PDGW, participants in this process make various types of errors, primarily due to the large amount of data. Research into the processes of organizing and managing coursework and diploma projects in the educational process has revealed problems such as the decentralization of process management tools and information about the progress of processes [1], the frequent detachment of project topics from existing needs and tasks solved in the real sector of the economy [2]. In addition, the general trends of informatization and digitalization of education, which have their own advantages [3], should be reflected at this stage of the educational process. The use of ICT in the process of organizing PDGW also has a positive effect on improving the quality of the educational process [1].

## I. PROPOSED SOLUTION

Taking into account many years of accumulated experience in supporting the process, the graduate department of information systems and technologies of the BSUIR has developed and implemented a web system for automating the processes of organizing and supporting the PDGW, which allows minimizing errors caused by the human factor, simplifying the tasks performed for all participants in the process (including students), concentrate all the necessary information in one place and increase the visibility of the results obtained. In addition to students, the PDGW involves graduate work supervisors (both staff members of the department and external specialists), technical consultants, normative inspectors, feasibility study consultants, members of working commissions, reviewers, process managers, secretaries of the state examination commission (SEC) and head of the department. The PDGW itself,

from an organizational point of view, consists of the following stages: choosing a topic for a diploma project, choosing a supervisor, completing and defending pre-diploma internship, checking a feasibility study, passing regulatory control, passing a working commission (pre-defense), reviewing and defending a diploma project at the SEC, and also drawing up reporting documentation and draft orders and instructions at all stages. All these stages are automated and digitalized to a certain extent through the use of a web application and are controlled by process manager. The developed web system has three access levels: “student”, “teacher” (includes supervisor, consultants, normative inspectors, etc.) and “administrator” with full functionality (process manager and head of department). To use the application, users must register and consent to the processing of their personal data. To verify system users, only those users who are listed in the system database can register: the student must be a final year student, and the teachers must be listed as employees of the department. Such addition to the system database can be done manually (for special cases) or through synchronization with other databases of systems used at the university (dean’s office, human resources department, etc.) by uploading spreadsheets. All registration processes, and then filling out all fields for entering any information, are accompanied by prompts that can be generated and edited from the system administrator’s personal account. After registration, a user of the “student” access level indicates the place of pre-diploma internship, in accordance with the concluded agreement (necessary for generating reporting documentation). Next, the student is asked to choose the topic of the thesis project and the thesis supervisor. To increase the practice-oriented nature of diploma projects, the student is also given the opportunity to propose his own topic for the diploma project, for example, related to his work, hobbies and scientific research, and then send this topic for approval and adjustment to the selected supervisor. Moreover, the student can choose as a supervisor either a full-time employee of the department from the system database (the maximum number of graduates for each teacher is synchronized with the planned workload accord-

ing to the teacher's individual plan), or propose an external supervisor. When selecting an external manager, the corresponding application is displayed in the personal account of the process manager, who carries out verification and, if necessary, approval. When a student selects a supervisor, a letter is sent to his email with a link to his personal account, where an application from the student is awaited. The supervisor sees information about the student and the selected topic of the diploma project. The supervisor can accept or reject the application and, if accepted, subsequently adjust the topic. While the supervisor has not accepted the application, the student can withdraw it and send a request to another supervisor, as well as edit the proposed topic. After accepting a request from a student, an electronic journal of the PDGW is displayed in the teacher's and the student's personal account. Moreover, the right to change various elements of the electronic journal has the appropriate persons responsible for the various stages of the PDGW (supervisor, technical consultant, normative inspector, economic consultant, chairman of the working commission, etc.). The student can change the choice of a date convenient for him to defend his thesis project (SEC) after passing the working commission. Since the manager displays the electronic journals of all his graduate students, various filters are provided in his personal account.

Студент: Фамилия2 Имя2 Отчество2

Информация о дипломном проекте:

Тема: Программный модуль мониторинга учета рабочего времени в организации по оказанию бытовых услуг

Место проведения практики: ООО "Компания2" Город: Минск

Практика: с 27.10.2023 по 29.11.2023 Оценка за практику: 8

Опроценки:
 

до 23.11.2023	до 04.12.2023	до 18.12.2023
25	45	

ТЭО:
 

Дата: 27.11.2023	Статус: Не готов
Дата: 01.12.2023	Статус: Готов

Нормоконтроль:
 

Дата: 15.12.2023	Статус: Частично готов
Дата: 22.12.2023	Статус: Готов

Рабочая комиссия №1:
 

Дата: 04.01.2024	с 12:00	по 14:00	Адрес: 803-7
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ГЭК: ВЫБРАТЬ ДАТУ

Figure 1 – Example of an electronic journal

All appointments of responsible persons and reviewers are made from the personal account of the process manager (system administrator). Moreover, this process is also automated, for example, you can appoint a technical consultant for all students whose supervisor is a certain employee, or assign a normative inspector for all students of a given group, etc.

Савенко Андрей Геннадьевич (Админ) ДП: Test Выйти

Назначения: НОРМОКОНТРОЛЬ ТЭО РАБОЧЕ КОМИССИИ РЕЦЕНЗЕНТЫ

Нормоконтроль

Группа: 981061 Ответственный: Савенко Андрей Геннадьевич

Группа: 981063 Ответственный: Карпечин Ольга Юрьевна

Группа: 981064 Ответственный: Колоткин Иван Александрович

Figure 2 – Example of an electronic journal

Also, in the personal account of the process manager, the parameters of the electronic journal are configured (for example, performance standards and their gradation when students pass checkpoints (percentages), the date of passing checkpoints, the date of the defense (SEC) and the maximum number of projects heard on this date. An extremely important feature is the function of automatic generation of reporting documentation and draft orders for the process manager. It allows you to generate text documents according to the required pattern of the following documents: a draft order on pre-diploma practice, a report on the beginning of practice, a report on completion of practice, a draft order on the approval of the topics of diploma projects and supervisors. Documents are generated with one click.

## II. CONCLUSION

The developed web system significantly simplifies and makes convenient the process of organizing, supporting and completing a diploma project for all participants in this business process, allows students to automatically offer students topics for diploma projects related to real projects, select and propose managers, minimizes errors caused by the human factor, which is especially important for a department that graduates a large number of students. The web system was introduced into the organization of the process at the Department of Information Systems and Technologies of the BSUIR and is hosted on the university server in the public domain.

## BIBLIOGRAPHY

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