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**INTRODUCTION OF AN INDIVIDUAL EDUCATIONAL TRAJECTORY IN A HIGHER
EDUCATION INSTITUTION THROUGH THE IMPLEMENTATION OF A CATALOG
OF ELECTIVE DISCIPLINES**

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Institutions of higher education are increasingly faced with the diversity of needs and expectations of students, which calls into question traditional educational curricula. In this context, there is a need to introduce new approaches that provide students with greater flexibility in learning and the opportunity to independently shape their educational path. One of these approaches is an individual educational trajectory, which allows students to actively participate in the formation of their individual learning paths, increasing their motivation and interest in the learning process. The urgency of introducing an individual educational trajectory in universities reflects the need to adapt the educational system to modern realities and individual needs of students. It is also a response to the challenge of ensuring flexibility, differentiation and personalization of training, which is becoming increasingly important in light of the rapidly changing labor market and the requirements for the competencies of future professionals. The article examines the possibility of introducing an individual educational trajectory for students of higher education institutions through the implementation of the “catalog of elective disciplines” module in the e-learning system, evaluation and planning of the educational process, determination of success criteria and support of students in the process of selection and advancement along an individual trajectory. The relevance of this issue is due to changes in the modern educational environment, which requires a more flexible approach to learning to take into account the individual needs and interests of students. An analysis of research related to the implementation of an individual educational trajectory and the implementation of the catalog of selective disciplines was carried out.

Keywords: *student-centered learning, individual educational trajectory, elective subjects, e-learning system, catalog of elective subjects*

1. Introduction

Higher education is a key element of social progress and development, and also has a significant impact on the formation of the country's intellectual, social and economic potential. In recent decades, there have been a number of general trends affecting higher education, namely: globalization, technological progress, societal change, and demographic transition. In particular, an important aspect of the organization of the educational process is the importance of introducing student-centered learning as the basis for effective learning and development of higher education students.

Globalization has significantly changed the paradigm of higher education [1]. Students have access to a huge amount of knowledge at any time and place, communication and cooperation with



like-minded people acquires an intercultural character. This requires universities to ensure international competitiveness and develop students' intercultural competence.

Technological progress, in particular digital technologies, is changing the format of learning and access to knowledge. The digital transformation of education promotes the development of educational platforms and online resources that provide students with access to a variety of educational content, helps to adapt and personalize educational resources and access relevant information at any time. Digital resources provide greater opportunities for interaction and collaboration between participants in the educational process, regardless of location, feedback to provide personalized support for further learning of students. Higher education institutions (HEIs) are increasingly using digital educational environments, electronic libraries, video conferencing, virtual and remote laboratories. artificial intelligence, virtual, augmented reality and other tools to improve the quality of education.

Society also demands changes in higher education. The need for flexibility and quick response to the needs of the labor market is growing. Universities should ensure the development of practical skills, entrepreneurial thinking and interpersonal competencies so that graduates can successfully integrate into modern society. Thus, digital transformation stimulates universities to introduce individual educational trajectories.

2. Theoretical aspects of the introduction of an individual educational trajectory in HEIs

Student-centered learning is considered one of the most important concepts in higher education today. The concept of student-centered learning is one of the key paradigms defining the relationship between a teacher and a student in the educational process. This concept is based on the principle of the student's active participation in his own education and ensuring his personal development and self-realization, the implementation of which contributes to building an individual educational trajectory.

A student-centered approach to learning provides students with wider opportunities for self-development and solving real problems, which provides them with preparation for professional activity and self-realization in the future. The main advantage of the student-centered approach is to increase students' motivation and interest in learning, which ensures deeper and more effective learning of the educational material.

An important element of the student-centered approach is the free choice by the students of the topics of individual educational tasks, master's projects and practice bases, and the formation of an individual educational trajectory. The individual educational trajectory is one of the modern learning technologies, which gives students the opportunity to determine their own path in learning and development. This technology allows you to choose subjects, topics and learning methods that best meet the needs and interests of students. This approach to learning can help them better understand the material, increase their interest in learning, and help them develop skills that will be useful later in life [2].

The issue of individual educational trajectory is of interest to many researchers. The theoretical foundations, essence and features of the concept of individual educational trajectory were studied in the works H. Shevchuk [3], T. Korostiianets [4], V. Fedorova [5], M. Shuliaka, V. Lytvyn [6], I. Krasnoshchok [7].

Features of the use of information systems and digital learning platforms in the construction of an individual educational trajectory of an education student are considered in the works of O. Nalyvaiko, N. Nalyvaiko [8], O. Kobylska, L. Shevchuk, S. Yashanov [9].

In institutions of higher education, the implementation of an individual educational trajectory is an important element of the formation of an innovative educational system that ensures the creation of conditions for the individual development of each student. However, the use of this technology requires a change in the traditional model of education and the introduction of new approaches to the educational process.

One of the features of the implementation of an individual educational trajectory is the need to individualize the educational process. This means that the teacher should implement a personalized approach to each student, taking into account his needs and interests. For this, it is necessary to create a system of diagnosis and analysis of students' needs, which will allow them to determine individual development plans for each student.

Another feature of the implementation of an individual educational trajectory is the need to create an appropriate infrastructure to ensure this process. Such infrastructure may include: appropriate software for planning the learning trajectory, a system for monitoring student progress, and a feedback system between students and teachers.

It is worth noting that the use of an individual educational trajectory can help improve the quality of education and make it more effective. In particular, students can choose disciplines that interest them and independently shape their educational environment, which will contribute to increasing their motivation for learning and development.

Ways of implementing an individual educational trajectory are shown in the diagram (Fig. 1).

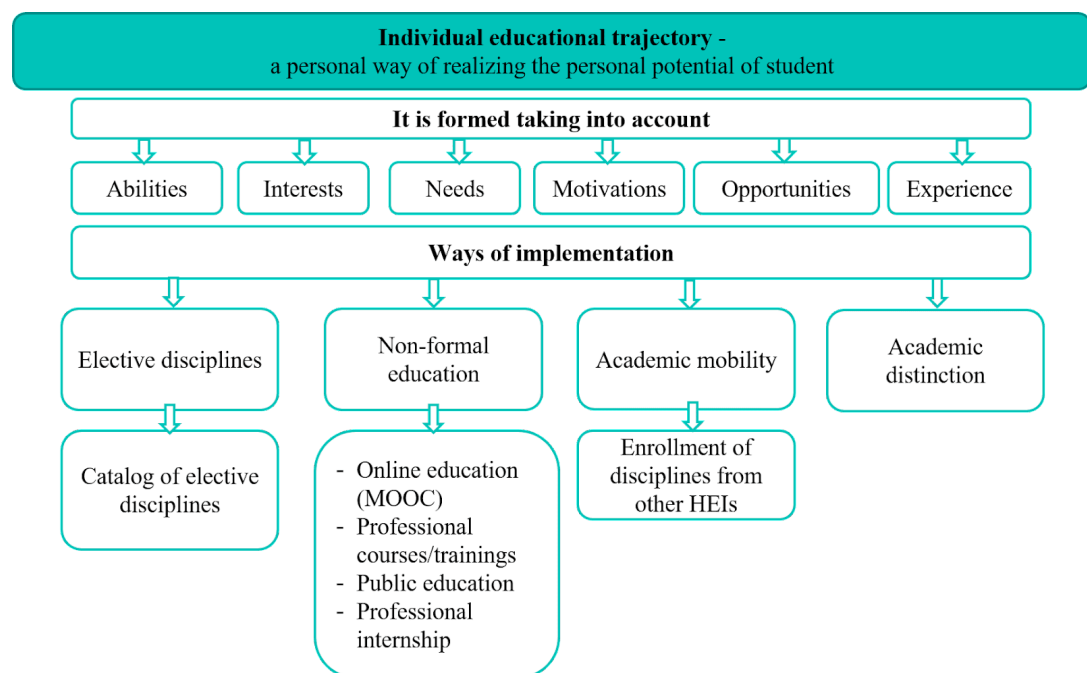


Figure 1. Individual educational trajectory

The introduction of elective disciplines is one of the components of the formation of an individual educational trajectory. This initiative allows students to choose disciplines that they find most interesting or useful for their professional and personal development. Elective disciplines provide students with the opportunity to deepen professional competences, expand their horizons, acquire new knowledge and skills, and also make their educational experience more diverse and useful. This allows students to be more motivated to study and enjoy the process of acquiring knowledge and skills. This approach allows universities to be more flexible and adaptable to changes in society and the labor market. Elective disciplines can be focused on personal development, new technologies, scientific discoveries or on the changing needs of the labor market. In general, the introduction of elective disciplines is an important and relevant element of modern university education, therefore the goal of the study is the introduction of an individual educational trajectory in HEIs by implementing a catalog of elective disciplines.

Elective disciplines originate from the concept of person-centered teaching, which was systematized by the American psychologist Carl Rogers in the middle of the 20th century. It is based on the principle that a pupil or student takes an active part in shaping their educational trajectory,

choosing what to learn, how to learn and how to evaluate their own knowledge. The teacher performs the functions of a facilitator while moving along this trajectory. This movement is accompanied by constant introspection and close communication between the teacher and the student [10].

In higher education, this concept in practice is closely related to the ideals of liberal education, which is designed to provide broad education, erudition and the ability to learn. In particular, in European universities, student-oriented learning is quite widespread, it was reflected in the Leuven Communiqué [11] and is the basis of the Bologna process. In turn, elective disciplines as one of its elements have become an integral part of university programs in developed countries. The introduction of elective disciplines allows students to supplement their main specialty with an additional specialty or take separate courses for a broad erudition. The possibility of choosing disciplines from different faculties and departments is an effective tool for interdisciplinarity or even interculturality.

In Ukraine, the right of students to choose educational disciplines is approved at the legislative level, so according to the Law of Ukraine "On Education", students have the right to form an individual educational trajectory, which is realized, in particular, through a free choice of types, forms and pace of obtaining education, educational institutions and proposed them of educational programs, educational disciplines and their level of complexity, methods and means of education. An individual educational trajectory is a personal way of realizing the personal potential of the student of education, which is formed taking into account his abilities, interests, needs, motivation, opportunities and experience, based on the student's choice of types, forms and pace of education, subjects of educational activity and those proposed by them educational programs, educational disciplines and their level of complexity, methods and teaching aids. An individual educational trajectory in an educational institution can be implemented through an individual educational plan, which determines the sequence, form and pace of assimilation by the student of educational components of the educational program with the aim of realizing his individual educational trajectory and is developed by the educational institution in cooperation with the student in the presence of the necessary resources [12].

Also, the Law of Ukraine "On Higher Education" states that students have the right to choose academic disciplines within the limits provided by the relevant educational program and curriculum, in the amount of at least 25 percent of the total number of ECTS credits provided for a given level of higher education [13]. Therefore, universities face the task of creating an innovative educational system that ensures the individual development of each student. An important aspect of the successful implementation of technology is the formation of a regulatory framework, the creation of an appropriate infrastructure, the adaptation of educational and professional programs for the implementation of students' choices.

At the same time, the quality of the educational programs for which higher education candidates are trained is ensured by the accreditation procedure carried out by the National Agency for Quality Assurance of Higher Education. A mandatory condition for accreditation is the compliance of the educational program with the criteria in accordance with the "Regulations on the Accreditation of Educational Programs for the Training of Higher Education Candidates", according to which the structure of the educational program should provide for the formation of an individual educational trajectory, in particular through the individual choice of higher education candidates by disciplines to the extent provided by law [14].

The formation of an individual educational trajectory at Grinchenko University is ensured by the Regulation on the organization of the educational process, the Regulation on the procedure and conditions for the selection of educational disciplines, the Regulation on the procedure for realizing the right to academic mobility of participants in the educational process. According to these documents, students have the right to: choose academic disciplines in the amount of at least 25% of the total number of ECTS credits provided for in the educational program; study according to an individual schedule; academic mobility, including international mobility; the possibility of crediting credits received in non-formal education; the opportunity to offer bases for practice, as well as own topics of individual tasks, master's theses.

The formation of an individual educational trajectory is implemented in the higher education institutions of Ukraine in various ways. The analysis of the websites of higher education institutions of

Ukraine proved that the procedure for choosing academic disciplines is implemented either through specialized information systems, or by filling out online forms, or submitting an application in paper form. A selection of available tools for forming an educational trajectory in higher education institutions of Ukraine is presented in Table 1.

Table 1
The procedure for choosing academic disciplines in HEIs of Ukraine

HEI	Link	Availability of an automated selection system	Additional Information
National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute"	https://kpi.ua/	The choice of disciplines is carried out through the Electronic Campus system.	Annotations of elective disciplines in the form of PDF files are posted on the websites of structural divisions of higher education institutions.
Taras Shevchenko National University of Kyiv	https://knu.ua/	The selection is made through the student's personal office in the university's information system.	Work programs of elective disciplines are posted on the websites of the structural units of HEI.
Sumy State University	https://sumdu.edu.ua/	The selection is made through the student's personal office in the university's information system.	The description and annotations of elective disciplines are placed in a single information system.
National University of Life and Environmental Sciences of Ukraine	https://nubip.edu.ua/	The choice is made by filling out a questionnaire in a paper version in the classroom at a meeting with the guarantor of the educational curriculum and the teachers who read the elective disciplines.	Annotations of elective disciplines in the form of Word files are posted on the website of the HEI and on the Educational and informational portal of the National University of Life and Environmental Sciences of Ukraine.
National Aviation University	https://nau.edu.ua/	The choice of disciplines is carried out through the system of forming an individual educational trajectory.	Annotations of elective disciplines in the form of PDF files are posted on the website of the HEI.
Poltava State Agrarian University	https://www.pdau.edu.ua/	The choice is made through the student's personal account.	Annotations of elective disciplines in HTML and PDF format are available on the official website of the HEI.

Dnipropetrovsk State University of Internal Affairs	https://dduvs.in.ua/	The choice of academic disciplines is carried out by filling out Google Forms.	Abstracts of elective disciplines in PDF and PPTX format are available on the official website of the HEI.
Mukachevo State University	https://msu.edu.ua/	The choice of educational disciplines is carried out by filling out Microsoft Forms.	Abstracts of elective disciplines in PDF format are available on the official website of the HEI.
National University «Yuri Kondratyuk Poltava Polytechnic»	https://nupp.edu.ua/	The choice of academic disciplines is carried out in the student's personal electronic account.	The description and work programs of elective disciplines are posted on the official website of the HEI.
King Danylo University	https://ukd.edu.ua/	The choice of academic disciplines is carried out by filling out Google Forms.	Annotations of elective disciplines in the form of Google documents are posted on the website of the HEI.

Based on the results of the analysis, we see that the most convenient and effective way to exercise the right to choose educational disciplines for students and the administration of higher education institutions is the use of specialized information systems. At Grinchenko University, this is a specialized electronic module in the E-learning system, to which the student has access in a personal office.

In accordance with the Regulations on the Organization of the Educational Process of the Borys Grinchenko Kyiv University, based on the educational program for each specialty, the university develops a curriculum, which defines the list and volume of educational disciplines in ECTS credits, the sequence of studying the disciplines, the forms of conducting educational classes and their scope, schedule educational process, forms of current and final control. The list of disciplines of the curriculum of the educational program consists of two parts - mandatory and elective. The elective part of the curriculum is at least 25 percent of the total number of ECTS credits provided for a certain level of higher education. The student of higher education forms the specified part of the curriculum independently from the list of disciplines, additional specializations, etc [15].

3. Implementation of choice by students in the E-learning system of Grinchenko University

At Borys Grinchenko Kyiv University, considerable attention is paid to the implementation of electronic learning, which is based on the use of electronic content, including electronic training courses and electronic communication technologies, and the cooperation of all participants in the educational process based on the created electronic information and educational environment of the University [16]. In the e-learning system, digital educational programs are organized in the form of metacourses. Metacourses "Educational-professional/Educational-scientific programs (EPP/ESP)" in the e-learning system are created for each new edition of the EPP/ESP and form of study, contain e-courses for all disciplines of the corresponding EPP [17]. The "General" section contains general information about the EPP/ESP, which includes the purpose, object of study, program goals. Current approvals of the EPP/ESP and the curriculum are also downloaded in the form of .PDF files. Each EPP/ESP metacourse must contain such mandatory blocks as:

- course description (link to the relevant EPP/ESP indicating the year and form of study, if the EPP is for full-time and part-time forms);
- questionnaires and testing;
- statistics;
- execution progress.

Electronic training courses are added to the metacourse only according to EPP/ESP in the semester(s) specified in the curriculum. A block of subjects from the catalog of elective disciplines is added at the end of the section of each semester. The journal of grades in the EPP/ESP metacourse is formed every semester. Summary of semester categories - average score for the semester (Fig. 2).

Figure 2. View of the educational program in the E-learning system

In order for students to make choices in the electronic learning system of Grinchenko University, a module of the electronic catalog of elective disciplines has been developed, with the help of which the student has the opportunity to choose disciplines according to the number of credits of the educational program.

The process of choosing disciplines is standardized:

- Approval of the list of elective disciplines in the structural division;
- Entry of disciplines into the catalog by teachers;
- Discipline check;
- Acquaintance with descriptions of disciplines by students;
- Making choices by students in the system;
- Checking and adjusting the choices made by students (required number of credits, fullness of groups, etc.);
- Final choice of disciplines by students and its fixation in the system;
- Coordination of the schedule;
- Enrollment of students in relevant e-courses.

To ensure the high quality of the educational process, Scientific methodical center of standardization and quality of education (SMC SQE) employees check the disciplines for selection, analysis and correction of the choices made by students.

The catalog of elective disciplines is a collection of information about the courses that students can choose during their studies. The catalog provides students with the opportunity to choose from a list of courses that are mandatory for their educational program and can be useful for their academic development and professional career. The catalog of elective disciplines helps students plan their individual educational trajectory, allows them to flexibly choose disciplines according to their

interests, needs and career goals. It contributes to a wider and more diverse acquisition of knowledge and skills that may be useful in the future. In addition, the catalog of elective disciplines reflects current trends in the field of education and development, and helps the university maintain a modern and competitive educational space.

The module of the electronic catalog of elective disciplines consists of the following components:

- Directories (educational and qualification levels, fields of knowledge, specialties, educational programs, specializations);
- The component of the distribution of students by educational-professional (educational-scientific) programs (EPP/ESP), specializations;
- Catalog of elective disciplines.

The procedure for organizing students' choice of disciplines from the catalog is shown in the diagram (Fig. 3)

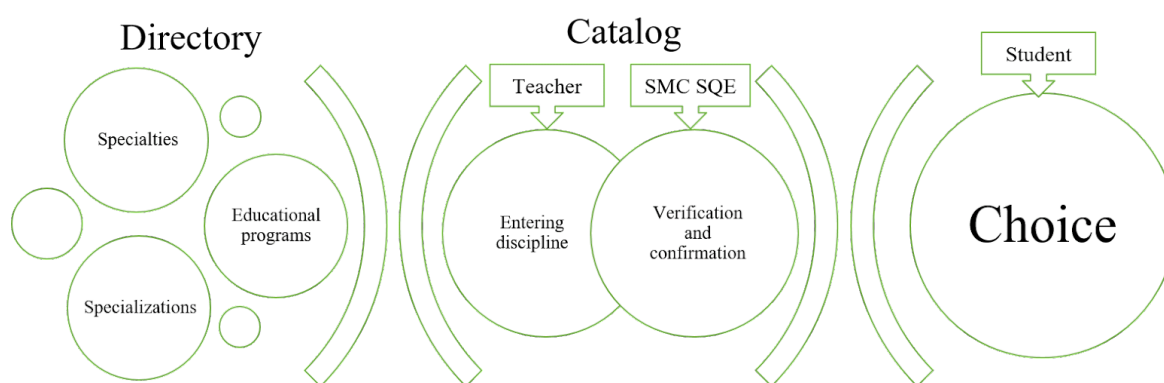


Figure 3. The procedure for organizing students' choice of disciplines from the catalog

The directories include all educational and qualification levels, fields of knowledge, specialties, educational programs, specializations for which higher education students are trained at the university, with an indication of the description, total number and distribution of credits by semesters, etc. (Fig. 4-7).



Figure 4. All directories in the catalog of elective disciplines

+ Add							
Code	Specialties	Short name	Degree	Department	Subject Area	Credits	Actions
012	Pre-school education	TO (B)	Bachelor	Faculty of Pedagogical Education	Education/Pedagogy	60	Edit Remove
073	Management	I (M)	Master's degree	Faculty of Economics and Management	Management and administration	30	Edit Remove
013	Primary education	PO(B)	Bachelor	Faculty of Pedagogical Education	Education/Pedagogy	60	Edit Remove
017	Physical culture and sports	Physical education (B)	Bachelor	Faculty of Health, Physical Education and Sports	Education/Pedagogy	60	Edit Remove

Figure 5. The directory "Specialties"

+ Add					
Name	Short name	Specialty	Credits	Actions	
122.00.01 Informatics	Inf	122 Computer Science (Bachelor)	60	Edit	Remove
012.00.01 Preschool education (master's degree)	TO (m)	012 Preschool Education (Master's)	23	Edit	Remove
073.00.04 Management of e-learning in the intercultural space (master's degree)	UENMP(m)	073 Management (Master's)	30	Edit	Remove
061.00.01 Journalism	JUR	061 Journalism (Bachelor)	60	Edit	Remove

Figure 6. The directory "Educational programs"

+ Add					
Name	Short name	Educational program \ Specialty	Credits	actions	
Selective block 1	VB1DO	012.00.01 Preschool education (Master's degree) \ 012 Preschool education (Master's degree)	23	Edit	Remove
Selective block 1	VB1DOZ	012.00.01 Preschool education (Master's degree, part-time) \ 012 Preschool education (Master's degree)	15	Edit	Remove
Elective block 2 "Selection from the course catalog"	VB2VKDO	012.00.01 Preschool education (Master's degree) \ 012 Preschool education (Master's degree)	18	Edit	Remove
Elective block 2 "Selection from the course catalog"	VB2VKDOZ	012.00.01 Preschool education (Master's degree, part-time) \ 012 Preschool education (Master's degree)	20	Edit	Remove

Figure 7. The directory "Specializations"

Access to the resources of the electronic catalog of elective disciplines is personalized with extensive access rights:

- The administrator has extended access to the settings of the entire module (filling in directories, assigning educational programs and specializations to students, editing the catalog, etc.);
- SMC SQE employees check and correct the list of disciplines entered by teachers in the catalog, analyze the results of students' choice of academic disciplines, form groups and streams of students to study the chosen disciplines;
- The teacher has access to the creation and review of disciplines entered into the catalog;
- The student can choose disciplines that are intended for the EPP/ESP and the specialization he is studying.

When adding a discipline to the catalog, the teacher fills in the basic information about the discipline (Fig. 8):

- The name of the discipline
- Names of authors, teachers
- Department, chair
- Educational level

- Educational program, specialization
- A brief description of the content (abstract, purpose, tasks, additional materials)
- Control form (credit, exam)
- The total number and distribution of credits and hours by semester
- Minimum and maximum number of students in the group

Figure 8. The page for adding a discipline to the catalog

After the teacher enters the discipline into the catalog, the employees of the SMC SQE check the correctness of the filled-in data - belonging to the EPP/ESP, the total number and distribution of credits, hours by semesters, etc. After a successful check, the discipline is confirmed in the system for further selection by students. (Fig. 9).

Name	Unit	Appointment	The authors	Teachers	Academic year	
Local and regional conflicts in new geopolitical conditions <small>Audit</small>	Faculty of Law and International Relations, Department of International Relations	Master's degree: Regional studies (master's degree)			2023-2024	More details Similar courses Confirm Reject
Fine art specialist block <small>Audit</small>	Faculty of Fine Arts and Design, Department of Fine Arts	Master's degree: Fine Arts (master's degree)	Konovalova OIha Volodymyrivna, Shivalina OIha Volodymyrivna	Zadnipliranyi Hennadii Trokymovych, Konovalova OIha Volodymyrivna, Mykhalevych Viktor Vadymovych	2023-2024	More details Similar courses Confirm Reject
Problems of information security in the modern world <small>Audit</small>	Faculty of Law and International Relations, Department of International Relations	Master's degree: Public communications (master's degree)			2023-2024	More details Similar courses Confirm Reject
Circular economy <small>Audit</small>	Faculty of Economics and Management, Department of International Economics	Master's degree (General): Higher school pedagogy (Master's degree), Secondary education pedagogy (Master's degree), Secondary education pedagogy (Master's degree, part-time), Corporate education and personnel development (Master's degree), Corporate education and personnel development (Master's degree, part-time)	Loiko Valeriia Viktorivna	Loiko Valeriia Viktorivna	2023-2024	More details Similar courses Confirm Reject
Information policy of the countries of the world <small>Audit</small>	Faculty of Law and International Relations, Department of International Relations	Master's degree: Public communications (master's degree)			2023-2024	More details Similar courses Confirm Reject
Start Up entrepreneurship <small>Audit</small>	Faculty of Economics and Management, Department of International Economics	Master's degree (General): Higher school pedagogy (Master's degree), Secondary education pedagogy (Master's degree), Secondary education pedagogy (Master's degree, part-time)	Ushenko Natalia Valentynivna	Ushenko Natalia Valentynivna	2023-2024	More details Similar courses Confirm Reject

Figure 9. Verification and approval tools by SMC SQE of elective disciplines

After confirmation, the discipline becomes available for viewing in the catalog and for selection by students. The choice of subjects from the selective part of the EPP/ESP by students includes the following possibilities:

1. Selection from the catalog of courses
2. Selection of the thematic block

The choice of the thematic block by the students creates conditions for deepening and expanding professional competences, taking into account the current state of development of society and the needs of the labor market. The selection of disciplines from the course catalog allows students to acquire additional general and general professional competencies within related specialties/fields and expand/deepen general competencies.

Each student has access only to the disciplines of the catalog of elective disciplines in accordance with the EPP/ESP and the specialization he is studying (Fig. 10).

Discipline	Subsection	Teachers	Distribution of credits
Elective block "General pedagogy and history of pedagogy"	Faculty of Pedagogical Education , Department of Educational Studies and Psychological and Pedagogical Sciences	Bodnenko Dmytro Mykolajowych , Lokshyna Olena Ihorivna , Melnychenko Olena Volodymyrivna	2nd semester: 2 4th semester: 8 5th semester: 4 6th semester: 2
Selective block "ICT in education"	Faculty of Information Technologies and Mathematics , Department of Computer Sciences	Bodnenko Dmytro Mykolajowych , Morze Natalia Viktorivna	2nd semester: 2 4th semester: 8 5th semester: 4 6th semester: 2
Elective block "Theory and method of education"	Faculty of Pedagogical Education , Department of Educational Studies and Psychological and Pedagogical Sciences	Bodnenko Dmytro Mykolajowych , Khoruzha Liudmyla Leonidivna	2nd semester: 2 4th semester: 8 5th semester: 4 6th semester: 2
Elective block "Theory and methodology of professional education"	Faculty of Pedagogical Education , Department of Educational Studies and Psychological and Pedagogical Sciences	Bodnenko Dmytro Mykolajowych , Bratko Mariia Vasylivna , Zhelanova Viktoriia Viacheslavivna , Khoruzha Liudmyla Leonidivna	2nd semester: 2 4th semester: 8 5th semester: 4 6th semester: 2

Figure 10. Students' choice of disciplines in the catalog

When choosing from the catalog, the student can familiarize himself with the purpose of the discipline, its annotation, program learning outcomes, the period of study of the discipline, distribution of credits by semesters, etc. After making a decision, the applicant puts the "Choose a discipline" mark in his personal electronic account, which is considered the fact of submitting an application to study selective disciplines from the catalog.

After the students have completed the procedure for choosing academic disciplines, SMC SQE employees analyze the results (Fig. 11-12) and form groups and streams of students to study disciplines (Fig. 13).

#	Student	Group	Educational program \ specialization	Year	Started
1	Barabash Yana Oleksandrivna	FUB-1-22-4.0d	035.01.01 Ukrainian language and literature, Linguistics	2023	05/09/2023
2	Bura Tetiana Andriivna	FUB-1-22-4.0d	035.01.01 Ukrainian language and literature, Linguistics	2023	05/09/2023
3	Petryk Roman Vasylyovych	FUB-1-22-4.0d	035.01.01 Ukrainian language and literature, Applied linguistics	2023	05/09/2023
4	Marus Mariia Mykolajivna	FUB-1-22-4.0z	035.01.01 Ukrainian language and literature, Elective block 4	2023	05/09/2023
5	Bliohytka Alina Viktorivna	FUB-1-22-4.0z	035.01.01 Ukrainian language and literature, Elective block 4	2023	05/09/2023
6	Oshanska Iryna Dmytrivna	FUB-1-22-4.0z	035.01.01 Ukrainian language and literature, Elective block 4	2023	05/09/2023
7	Shtoma Svitlana Viktorivna	FUB-1-22-4.0z	035.01.01 Ukrainian language and literature, Elective block 4	2023	05/09/2023
8	Bolarska Sofia Petrivna	ZURb-1-22-4.0z	061.00.01 Journalism, Selective block 2	2023	05/09/2023
9	Harbar Valeria Oleksivna	ZURb-1-22-4.0z	061.00.01 Journalism, Selective block 1	2023	05/09/2023
10	Lytvyn Alina Oleksandrivna	FUB-1-22-4.0d	035.01.01 Ukrainian language and literature, Linguistics	2023	05/08/2023

Figure 11. Review of the chosen disciplines by students

Filters

Full Name

Group

#	Group code	Number of students	Educational program	Specialization*	Added	-
1	FVb-1-22-4.0z	10	017.00.01 Physical education	-	2023.04.24	Selected disciplines
2	FUb-1-22-4.0z	11	035.01.01 Ukrainian language and literature	-	2023.04.24	Selected disciplines
3	POb-1-22-4.0z	12	013.00.01 Primary education	-	2023.04.23	Selected disciplines
4	KIB-1-22-4.0d	28	123.00.01 Computer engineering	-	2023.04.21	Selected disciplines
5	LOGb-1-22-4.0z	8	016.00.01 Speech therapy	-	2023.04.21	Selected disciplines

Figure 12. Review of the chosen disciplines by groups

Filters

Academic year

[Export](#)

#	Degree	Course	1	2	3	4	5	6	7	8	9	10	11	12
1	Bachelor	English for business communication	0	0	0	0	0	0	20	0	0	0	0	0
2	Bachelor	Ensemble game	0	0	0	0	0	0	0	12	0	0	0	0
3	Bachelor	Education of leadership qualities (OPP-2020)	0	0	0	0	0	0	0	76	0	0	0	0
4	Bachelor	Education of leadership qualities (OPP-2022)	0	0	0	0	0	33	0	0	0	0	0	0
5	Bachelor	Research activity of a designer student	0	0	0	0	0	0	0	27	0	0	0	0

Figure 13. Review of the chosen disciplines by students by educational level

After the procedure of verification and confirmation of the student's choice of disciplines by SMC SQE staff, a form with the distribution of the chosen disciplines is automatically generated for each student, which the student familiarizes himself with and confirms the choice with a personal signature (Fig 14).

Application to study disciplines of free choice in 2023-2025						
Department: Faculty of Information Technologies and Management			I am warned that the study of the chosen discipline is possible only if a group is formed			
Educational program: 123.00.01 Computer						
Group: KIB-1-22-4.0d			Date			
Student Name: Sklyarskyi Artem Kostiantynovych			Student's signature			
Discipline	Distribution of credits by					
	II course		III course		IV course	
	3	4	5	6	7	8
Distribution of credits according to the curriculum	5	10	10	10	15	10
Java programming language	5	0	0	0	0	0
Operating Systems	0	5	0	0	0	0
Computer simulation	0	5	0	0	0	0
Fundamentals of cryptography	0	0	5	0	0	0
Fundamentals of security of telecommunication technologies	0	0	5	0	0	0
Engineering infrastructure of the data center	0	0	0	5	0	0
System software	0	0	0	5	0	0
Software quality and testing	0	0	0	0	5	0
Cloud technologies	0	0	0	0	5	0
Technical operation of telecommunication systems and networks	0	0	0	0	5	0
Basics of reverse engineering	0	0	0	0	0	5
Protection of confidential data	0	0	0	0	0	5
Selection results	5	10	10	10	15	10
Note: Clause 2.4.6 Provision "If a student does not exercise his right to choose (academic discipline, specialized block) within the established terms without valid reasons, then the corresponding positions of his DNPS are determined on the proposal of the graduation department, taking into account the choice of other students studying under this educational program and is approved by the order of the head of the structural division (institute, faculty)"						

Figure 14. Application to study disciplines of free choice

Based on the result of the selection, an individual study plan of the student is formed, which specifies the mandatory study subjects, optional study subjects, and study subjects that the student studies additionally. The student's individual study plan is the main working document of the student, which contains information about the student, the list of academic disciplines provided for in the training program, the amount of the student's academic load from classroom and independent work, the student's learning results during the final control of knowledge and during attestation [15].

Selected disciplines are available to the student for viewing in the catalog of elective disciplines (Fig. 15) and in his personal office (Fig. 16).

Student page

2022

Name	Semester	Date
Selective block "ICT in education"	2	09/27/2022

Figure 15. Disciplines chosen by students in the catalog

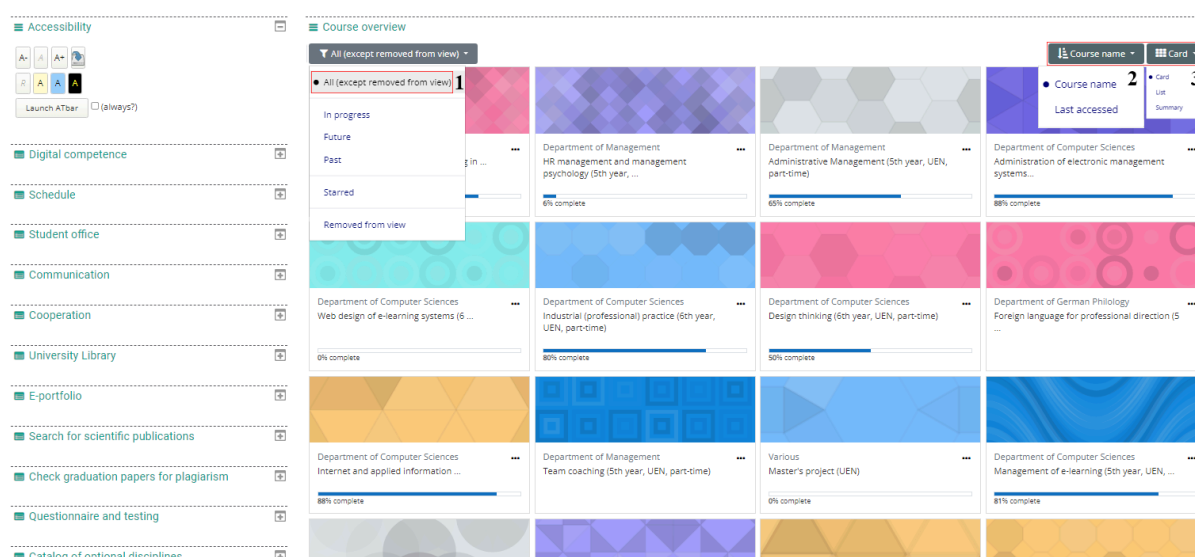


Figure 16. Student's personal office

The student's personal office contains all the necessary resources for the effective organization of the educational process: a list of disciplines of the mandatory and selective components of the educational program, as well as an additional block with useful digital tools that shape his individual educational trajectory. Next to the corresponding name of the discipline, if the parameters for tracking the execution of activities are indicated in the electronic course, information with the percentage of passing the electronic course is displayed to the student. To adjust the display of courses according to their own needs in their personal account, students can use a set of filters (1) (All (except removed from view), In progress, Future, Past, Starred, Removed from view), sorting (2) courses by name or last login, change the display (3) of the list of courses with cards, a list, an extended list.

The catalog of elective subjects at the Borys Grinchenko Kyiv University was implemented in two stages. At the first stage, all the necessary modules for its operation were created and launched for the selection of disciplines, after which a survey was conducted among students and employees of Grinchenko University regarding the usability of the catalog and their possible needs. At the second stage, the catalog of selective disciplines was refined in accordance with the revealed wishes of the survey participants:

1. Blocking of the choice of disciplines for each of the educational and qualification levels of students was introduced, which ensures the choice of disciplines in different periods of the academic year and makes it impossible for applicants to make any changes outside of the period of their selection.
2. A function has been implemented, with the help of which when making a choice, credits are "closed" by semester, that is, until 1 semester is filled, the choice of applicants will be blocked, without transition to the next semester, which makes it impossible to sort through credits in each semester.
3. For the convenience of processing data on the selection of students added selection report generation by SMC SQE staff.
4. For checking by employees of Scientific methodical center of standardization and quality of education added display of all students in the group who have to make a choice.

The main goal of the center's activity is to promote the organization of the educational process and its scientific and methodological support at the faculties, colleges of the University, in accordance with the requirements of the law, the functioning of the system of internal quality assurance of higher education, the introduction of modern methods and technologies into the educational process.

Elective educational disciplines are chosen by the student from the catalog, taking into account their own needs and interests in future professional activity and ensure the fulfillment of the requirements of the variable part of the educational program [15]. The catalog of elective disciplines

helps students plan their educational path, allowing them to flexibly choose disciplines according to their interests, needs and career goals.

The results of the survey conducted among students regarding the effectiveness of using the catalog of elective disciplines in the Grinchenko University E-learning system confirmed the importance of the implemented electronic catalog of elective disciplines, in general, 89% of respondents noted that it is convenient to make a choice using the catalog of elective disciplines, because everything is in one place in the student's personal office in the E-learning system (Fig. 17).

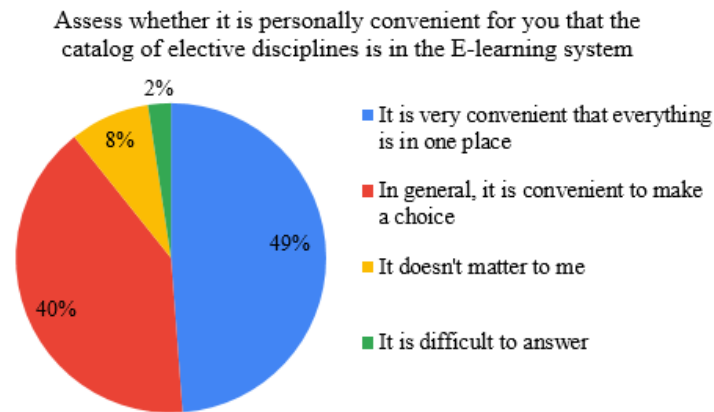


Figure 17. The results of a student survey on the convenience of the catalog of optional disciplines

Also, the students highly appreciated the clarity of the instructions for making a choice by means of the catalog of elective disciplines and the sufficiency of support from the university administration, 63% of respondents rated 4-5 (Fig. 18).

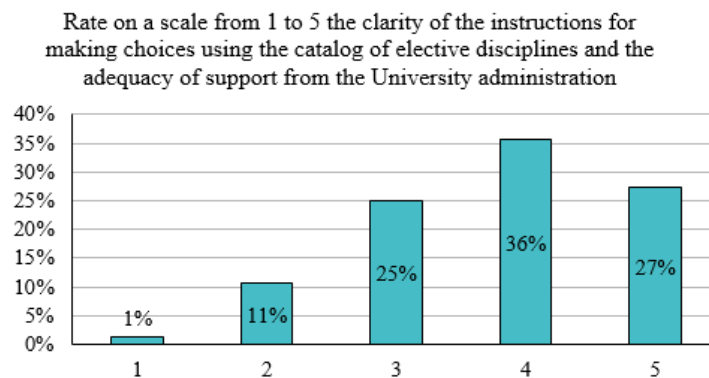


Figure 18. The results of a student survey on the comprehensibility of the instructions for making a choice

As a result of the survey, the students confirmed the importance of the selective component of the educational program for the formation of a personal educational trajectory, in particular, it was noted that elective disciplines provide an opportunity to deepen professional competences (68%), make your educational experience more diverse and interesting (58%), allow you to expand your horizons (55%) and gain new knowledge (68%) (Fig. 19).

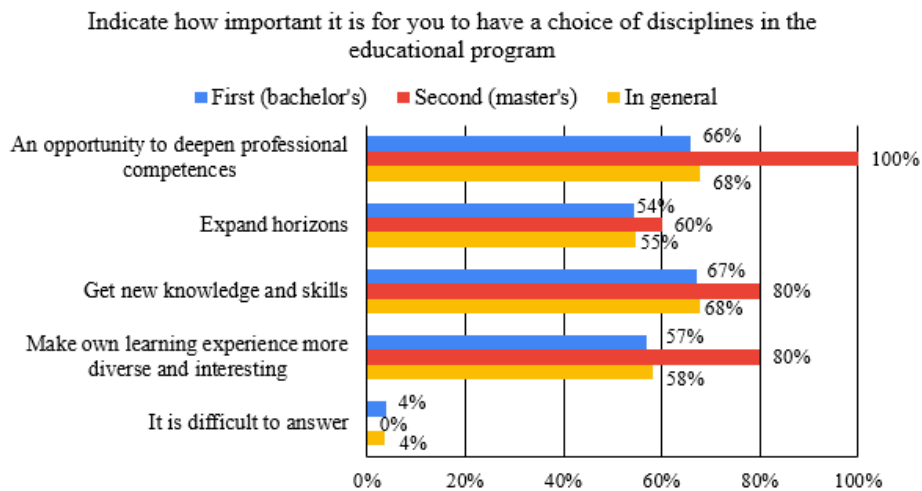


Figure 19. The results of a student survey on the importance of having a choice of disciplines in the educational program

61% of respondents when making a choice from the catalog preferred disciplines for deepening professional competences, 42% blocks of disciplines for personal development, and 42% chose the disciplines that most interested them (Fig. 20).

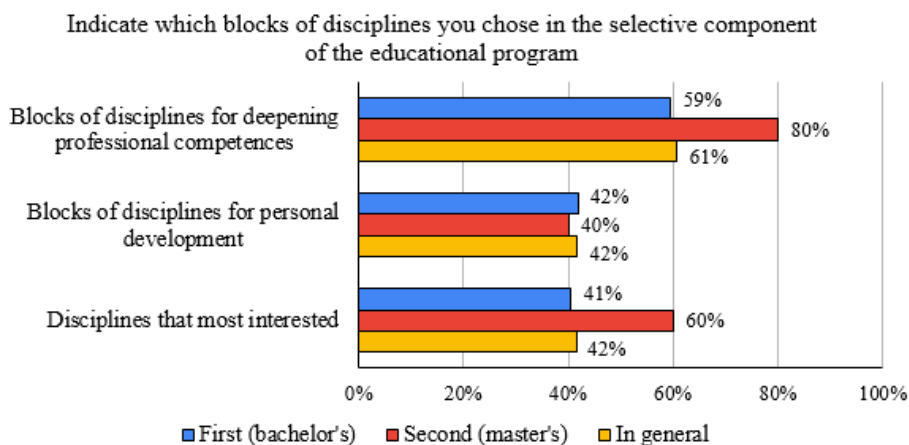


Figure 20. The results of the student survey regarding the priority blocks of disciplines in the selective component of the educational program

The use of the catalog of elective disciplines contributes to a wider and more diverse acquisition of knowledge and skills that may be necessary in the digital world. In addition, the organized catalog of elective disciplines makes it possible to monitor trends in the field of training and development of students, helping the university to maintain a modern and competitive educational space.

4. Conclusions

The introduction of elective disciplines allows students to participate more actively in the learning process, choose topics that interest them, and develop the ability to work independently and solve problems. This contributes to the formation of skills and abilities that are important in today's world.

Forming an individual educational trajectory, students choose those disciplines in which they are most interested, motivated to make efforts to learn the material. At the same time, teachers get the opportunity to work with more motivated students, which increases the quality of the discipline and the educational process in general.

Creating an atmosphere of healthy competition, motivating teachers to improve the programs of academic disciplines, updating the content to modern needs of the labor market to attract more students.

Prospects for further research include monitoring the ease of use of the catalog of elective disciplines by participants in the educational process, the introduction of artificial intelligence to build a personal individual educational trajectory of students, and further improvement of the system, which will include: assessing student satisfaction, identifying shortcomings and improving the interface of the catalog of elective disciplines, improving functionality.

In general, monitoring the ease of use of the catalog of elective disciplines and further improvement of the system are important steps to ensure user satisfaction and improve the quality of the educational process, which will contribute to the personal development of a modern student.

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РЕАЛІЗАЦІЯ ІНДИВІДУАЛЬНОЇ ОСВІТНЬОЇ ТРАЄКТОРІЇ У ЗАКЛАДІ ВИЩОЇ ОСВІТИ ШЛЯХОМ УПРОВАДЖЕННЯ КАТАЛОГУ ВИБІРКОВИХ ДИСЦИПЛІН

Заклади вищої освіти все частіше стикаються з розмаїттям потреб і очікувань студентів, що ставить під сумнів традиційні навчальні програми. У цьому контексті виникає необхідність запровадження нових підходів, які надають студентам більшу гнучкість у навчанні та можливість самостійно формувати свій освітній шлях. Одним із таких підходів є індивідуальна освітня траєкторія, яка дозволяє студентам брати активну участь у формуванні власних індивідуальних освітніх траєкторій, підвищуючи їх мотивацію та інтерес до процесу навчання. Актуальність запровадження індивідуальної освітньої траєкторії у ЗВО відображає необхідність адаптації освітньої системи до сучасних реалій та індивідуальних потреб студентів. Це також відповідь на виклик забезпечення гнучкості, диференціації та персоналізації навчання, що стає все більш важливим у світлі швидкозмінного ринку праці та вимог до компетенцій майбутніх фахівців. У статті досліджено можливість реалізації індивідуальної освітньої траєкторії студентів закладів вищої освіти шляхом упровадження в систему електронного навчання модуля «каталог дисциплін за вибором», оцінювання та планування освітнього процесу, визначення критеріїв успішності та підтримки студентів у процесі вибору та просування індивідуальною траєкторією. Актуальність цього питання зумовлена змінами в сучасному освітньому середовищі, що потребує більш гнучкого підходу до навчання з урахуванням індивідуальних потреб та інтересів учнів. Проведено аналіз досліджень щодо реалізації індивідуальної освітньої траєкторії та впровадження каталогу вибіркових дисциплін.

Ключові слова: студентоцентроване навчання, індивідуальна освітня траєкторія, дисципліни за вибором, система електронного навчання, каталог дисциплін за вибором

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