

Experience in Implementation of the New Elective Course “Actual Problems of Pharmacy Education”

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The paper focuses on the description of the new elective course “Actual problems of pharmacy education”, which was offered during the fall semester 2021/2022 academic year for first-year pharmacy foreign students at Bogomolets National Medical University. The detailed information about the organization of lectures and seminars are presented. Methods. The model of flipped class was chosen to teaching the proposed elective course. The attitude of students to the elective course was assessed by using post-course surveys. Results. Most of students reported that they would recommend this elective course to other students. Overall, students felt that the course was engaging, interesting and informative. Students’ attitudes also were positive toward the teaching style – flipped classroom. Conclusions. Most students earned grades of A and C. This high level of the students’ performance confirms that the elective course was successfully conducted achieving the desired learning outcomes.

Keywords: Pharmacy education, Foreign students, Flipped class, Elective course

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Introduction

Nowadays students have the opportunity to choose elective courses. Elective courses realize an important role in students' professional and personal development by integrating knowledge of many subjects and enriching their professional portfolio [1], [2]. In Ukraine, the amount of elective courses provided by the relevant educational program and curriculum is not less than 25% of the total number of ECTS credits, provided for this level of higher education [3].

Since 1961 Bogomolets National Medical University has been training specialists for foreign countries. More than 2,500 English-speaking students from 48 countries (for example, State of Israel, Republic of India, Republic of Iraq, Islamic Republic of Iran, Syrian Arab Republic, Republic of Lebanon, State of Libya, Hashemite Kingdom of Jordan, Kingdom of Saudi Arabia, Republic of Turkey, Islamic Emirate of Afghanistan, Republic of Azerbaijan, United States of America, Kingdom of Sweden, Federal Republic of Germany, Republic of Poland, Netherlands, Republic of Cyprus, Arab Republic of Egypt, Federal Republic of Nigeria, Republic of Ghana, Federal Democratic Republic of Ethiopia, Republic of Zimbabwe, Republic of Chad, Republic of Namibia, Republic of Cameroon, Republic of Kenya, Republic of Mauritius, Malaysia) are studying in Bogomolets National Medical University. So, the contingent of foreign citizens is not uniform on national, social and religious features, different educational levels and the specific institutions in which foreigners have received secondary education. As usually, foreign students do not know anything about the Ukraine and its education system. In addition, most first-year students do not realize the complexity and importance of the chosen profession.

The elective course "Actual problems of pharmacy education" was created for first-year pharmacy foreign students at Bogomolets National Medical University. For the first time it was offered during the fall semester 2021/2022 academic year. The primary goals of the course were to provide future pharmacists as foreign students with relevant information on the development of pharmaceutical education in Ukraine as well as to develop professional specialist thinking, communication skills, ability to solve complex situational tasks and problems of a professional character and be responsible for their results. The

New elective course includes important and actual topics for future pharmacists, for instance, "Organization and control of independent work of students", "Leader education in the pharmaceutical industry", "Research work of students". The importance and relevance of the proposed elective course for future pharmacists is confirmed by the fact that the studied during the course topics are considered in the form of individual pharmacy elective courses (1-4 credit hours courses) in different universities of United States of America (Table 1).

Table 1. Examples of elective courses in different pharmaceutical schools

Elective Courses	University	Reference
– Independent Study, – Leadership in Health-System Pharmacy, – Introduction to Academic Pharmacy.	University of Wisconsin-Madison	https://students.pharmacy.wisc.edu/pharmd-professional-electives-sop/
– Introduction to Pharmacy Research, – Leadership Best Sellers for Pharmacists, – Principles and Methods of Implementing Research, – Research Problems.	University of Minnesota	https://www.pharmacy.umn.edu/degrees-and-programs/doctor-pharmacy/curriculum/elective-course-descriptions
– Pharmacy Leadership, – Research, – Teaching and Learning Theory, – Supervised Teaching.	University at Buffalo	https://pharmacy.buffalo.edu/academics/pharmd/curriculum/electives.html
– Leadership for Pharmacy, – Seminar in Pharmacy Research, – Leadership Best Sellers – Thinking Skills in Pharmacy, – Leadership in International Pharmacy Outreach Experience, – Research in Pharmaceutics.	University of Florida	https://curriculum.pharmacy.ufl.edu/curriculum-courses/pharmd-electives/
– Leadership and Professional Development, – Leadership Experience Applied to Pharmacy.	Washington State University	https://pharmacy.wsu.edu/doctor-of-pharmacy/current-student-resources/approved-electives/
– Current aspects of pharmaceutical research, – Leadership.	Monash University	https://www.monash.edu/pharm/students/admin/reenrolment/pharmacyelectives
– Health Systems, – Research, – Independent Study.	West Virginia University	

<https://pharmacy.hsc.wvu.edu/pharmaceutical-systems-and-policy/phd-program-in-health-services-and-outcomes-research/information-for-current-students/required-and-elective-courses/>

Materials and Method

Blended form of education, that integrates online learning with a traditional classroom, were adopted in Bogomolets National Medical University due to the COVID-19 pandemic in the fall semester of 2021/2022 academic year. There were fifteen students enrolled in the course "Actual problems of pharmacy education" (Table 2). Some students were studying in-person, and some students were studying online.

Table 2. Students' demographic data

Country	Female	Male
Republic of Turkey		4
Federal Republic of Nigeria	1	3
Republic of Lebanon	1	
Kingdom of Morocco	2	1
Islamic Republic of Iran	1	
People's Democratic Republic of Algeria		2

The elective course consisted of five lectures (ten hours), ten seminars (twenty hours) and independent work of students (sixty six hours). The information about the course topics and distribution of the hours between them is presented in Table 3.

Table 3. Structure of the discipline

Name of topic	Number of hours	lectures	seminars	students' independent work
Topic 1. Bologna process and quality of education.	1	2	7	
Topic 2. Restructuring of the higher education in Ukraine according to the "Law on Higher Education", International Standard Classification of Education (ISCED-2013) and National Qualification Framework (NQFs).	1	2	7	
Topic 3. Organization and control of independent work of students.	1	2	7	
Topic 4. Current trends in the development of higher pharmacy education.	1	2	7	
Topic 5. Leader education in the pharmaceutical industry.	1	2	7	
Topic 6. Pharmacy education in Ukraine and abroad, stages of its development.	1	2	7	

Topic7. Innovative technologies of teaching disciplines.	1	2	6
Topic8. Research work of students.	1	2	6
Topic9. Today's and problems of higher education in Ukraine.	1	2	6
Topic10. The role of chemical and humanities in the education of pharmacists.	1	2	6
Total hours	1	2	6
	0	0	6

Bogomolets National Medical University has implemented the platform LIKAR_NMU (<https://likar.nmuofficial.com/mc/index.php/usr/login/login>) on the basis of Learning Management Systems Moodle for education [4, [5]. The using portal LIKAR_NMU allows creating a well-structured teacher-student interaction. All necessary materials were posted on a web-based learning platform LIKAR_NMU. There are curriculum and syllabus of the course, calendar-thematic plans of lectures, seminars and students' independent work, presentations of lectures, study guide for each seminar, recommended literature. Study guide for each seminar include actuality of the topic, general aims of the seminar, key questions of the seminar, content of the topic (theoretical material), questions for self-control and references. Messenger Viber was also used in educational process as an additional and effective element of a course "Actual problems of pharmacy education" for the encouraging information sharing among students, increasing the motivation of the students about the course, information sharing the documents related to a subject, instant answers to obscure topics [6], [7]. Each lecture and seminar were occurred like videoconference via Zoom for students studying online.

The model of flipped class was chosen to teaching the proposed elective course, in which students learn the course content outside of class and actively engage with the material during the class [8]–[10].

The lectures consisted of lecturer's narrating over a PowerPoint presentation. During their listening in-person (or viewing online via platform LIKAR_NMU), students were encouraged to take notes and write down any questions they had about the material. All presentations were available for viewing the entire term.

A package of pre-assigned self-learning materials (articles, useful websites) for each seminars' topic were posted on the platform LIKAR_NMU. Figure 1 demonstrates the organizing of recommended

Literature for pre-class self-learning at the platform LIKAR_NMU. So, out-class activity of students includes watching the relevant lecture online (who need this), learning the study guide for seminar and proposed list of articles and websites.

Further Method

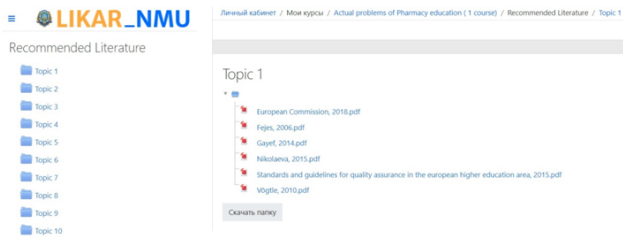


Figure 1. Scan of the part of discipline page “Actual problems of pharmacy education” on the platform LIKAR_NMU

The detailed information about the key questions for pre-class studying and the questions for in-class discussions is presented in Table 4.

Table 4. Key questions for pre-class studying and the questions for in-class discussions

Topic	Questions for pre-class studying	Questions for in-class discussions
Bologna process and quality of education.	– what is the Bologna Process? – the process of Ukraine in joining the European Higher Education Area; – quality assurance; – three-cycle degree structures.	– analyze the Bologna process as a global template for higher education reform efforts; – pros and cons of the Bologna Process.
Restructuring of the higher education in Ukraine according to the “Law on Higher Education”, International Standard Classification of Education (ISCED-2013) and National Qualification Framework (NQFs).	– the higher education system of Ukraine; – the Law on Higher Education; – Mission Statement and Strategy of the National Agency for Higher Education Quality Assurance (NAQA); – National Qualification Framework (NQF); – International Standard Classification of Education (ISCED).	– what are the main provisions of “Law on Higher Education? – do you support the implementation of the Law of Ukraine “On Higher Education”? – what are the main strategic goals of the National Agency for Higher Education Quality Assurance? – explain the competencies according to the second level of higher education (master's degree) according to the National Qualifications Framework. Give examples; – explain the main points

of International Standard Classification of Education; – describe the correspondence between ISCED 2011 and ISCED 1997 levels.		
Organization and independent work of students.	– the concept of independent organizing activities of students; – the types of independent activities of students; – classification of individual work.	– which means of organizing independent pharmacy education? Explain your answer; – why independent work is important for future pharmacist? – which types of independent work are now present in your education? – analyze the levels of individual work and try to find correspondence between them and disciplines. Propose the most appropriate level of students’ individual work to each of studying discipline; – compare the on class and out-of-class independent work of students. Which one is the most important? Explain your answer.
Current trends in the development of higher pharmacy education.	– learning to teach; – students’ thinking and reasoning; – changing pharmacy teaching.	– student-centered approach to teaching; – personal epistemology; – epistemological beliefs in pharmacy; – constructive alignment and motivation; – assessment methods; – constructive and destructive friction.
Leadership in the pharmaceutical industry.	– what is leadership? – leadership in pharmacy education; – leadership in curriculum design; – seven-star pharmacist concept and eight-star	

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<p>phar maci st conc ept; – leade rship comp etence ies; – proce ss for effect ive leade rship Code of ethic s for com muni ty phar maci sts.</p>	<p>– propose the best definition for term "leadership" according to your own opinion. Argue your answer; – why leadership is important for pharmacy education? – seven-star pharmacist concept and eight-star pharmacist concept. Explain each attribute of these concepts; – is an additional eighth attribute (researcher) important for pharmacy education? Explain your answer; – explain the role of curriculum design for education of a leader in pharmacy education; – name leadership competencies. Which are the most important for future pharmacists according to your own opinion? – discuss the main points of Code of ethics for community pharmacists.</p>	<p>21st century; – what you know about the Medicines Act of Ukraine? – analyze the specific peculiarities, principles and features of the occupational training of pharmaceutical industry professionals; – tell short information about pharmacy education in your own country.</p>	<p>Innovative technologies of teaching disciplines.</p>	<p>– different definitions of term "innovation"; – development and application of innovative technologies in the process of remote education of Ukraine; – top innovative technologies in education.</p>	<p>– analyze the different definitions of term "innovation" and propose the best definition; – place and role of information technology in the innovative education development; – analyze the different types of innovative technologies in the process of remote education and indicate cons and pros of each one; – analyze the structure, the ways and the main components of the innovative education development.</p>
<p>Phar macy educ ation in Ukrai ne and abroa d, stage s of its devel opme nt.</p>	<p>– the basic trends of the system of the occupational training of pharmaceutical industry professionals in Ukraine; – formation and development of the pharmaceutical science in Ukraine (second half of XX – beginning of XXI centuries); – development stages of the occupational training of pharmaceutical industry professionals in Ukraine in the 20th to early 21st centuries.</p>	<p>– by which processes the development of the occupational training of pharmaceutical industry professionals in Ukraine are driven? – which fundamental political & social as well economic changes are, occurred in the Union of Soviet Socialist Republics at the beginning of 90-s? – where was the best progress in the development of pharmacy in the early 20th century? – explain the essential changes of the pharmaceutical education of Ukraine since the end of xx century suffered; – which Public organizations and societies were exist of the early 20th century? – how many stages are defined in the development of pharmaceutical education in Ukraine in the second half of the 20th to early 21st century? – analyze the each stage of the development of pharmaceutical education in Ukraine in the second half of the 20th to early</p>	<p>Research work of students.</p>	<p>– purposes, tasks and objectives of research work of students; – name the types of research work; – define research processes; – why is research work important for students? – analysis of research work of master's students.</p>	<p>– analyze the different definitions of the term "research" and propose the best one according to your own opinion; – name reasons why research is important for students; – does you want do research work in the future and why? – how the research work help you become the good pharmacists? – can we consider research work as one of the mechanisms for the integration of higher professional education into a modern innovative society? Explain your answer.</p>
			<p>Today's and problems of higher education in Ukraine.</p>	<p>– the main trends in the higher education in Ukraine; – distance learning at higher</p>	

education institutions of Ukraine; – trends in the development of the educational environment in the context of globalization.	– the role of distance learning at higher education institutions of Ukraine; – how the COVID-19 have challenged the Ukrainian higher education? – how the changes in modern technologies of learning have challenged the Ukrainian higher education? – define opportunities for the adoption and interpretation of new trends within the framework of the education system of Ukraine.	
The role of chemical and humanities in the education of pharmacists.	– role of chemical disciplines in the education of pharmacists; – role of humanities in the education of pharmacists; – nine arguments that the humanities are important.	– why knowledge of chemistry is essential for a pharmacist? – which types of chemistry are important for pharmacist? – why study humanistic subjects? – analyze the arguments that the humanities are important; – propose elective courses which you want study in Bogomolets National Medical University.

Course material was presented at an appropriate level of understanding	4,67
Course is very engaging	4,50
Course is with effective delivery of material	4,50
Lectures are very informative and interesting	4,42
The seminars are very interactive	4,50
I like the flipped classroom	4,67
I would recommend this elective course to other students	4,75

The responses to survey questions revealed that students felt that the course was engaging, interesting and interactive. Students’ attitudes were positive toward the teaching style flipped classroom. Most of them reported that they would recommend this elective course to other students.

Finally, the students were also asked to express their opinion about the value of course in general. Some comments summarize well the students’ experience of this course:

“In general, I liked this course. The instructor was enthusiastic about teaching and she taught very well and her treatment with students are nice. This course gave me good information, specially about pharmacy and being a pharmacist. It helped me to read and search more about being a good pharmacist. I didn’t see any negative thing from this course”;

“The course was good, I learnt so many things that I needed and wanted to know, so many things that were confusing to me became clear in this course. It increased my knowledge of the system of studying in general, it helped me learn about different studying systems in different countries and especially in Ukraine, following system I am studying”;

“The course was increased my knowledge of a lots of things, first about the education system in Ukraine and in Bogomolets, second about pharmacy education. I learnt a lot about what soft skills should I have in parallel with my theory education. I learnt what should I have to be good pharmacist after graduation”;

Results and Discussion

Student’s performance was evaluated through case studies, guided discussions, writing of case essays, presentations preparation and answering the questions. Number of students who received grades of A, B, C, D or E are shown in Table 5. Most students earned grades of A and C. This high level of the students’ performance confirms that the elective course was successfully conducted achieving the desired learning outcomes.

Table 5. Number of students who received grades of A, B, C, D or E in the course

Grade	A	B	C	D	E
Number of students	8	1	4	-	-

Twelve students (80,0%) completed the anonymous voluntary 7-question post-course survey. Quality of the course was assessed on a 5-point scale (5 = “strongly agree”, 4 = “agree”, 3 = “neutral”, 2 = “disagree”, 1 = “strongly disagree”) according to some criteria and students’ responses were averaged to get the mean (Table 6).

Table 6. Course evaluation

Statement	Mean values of students’ responses
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"The course is good, has been great and very enlightening course of me. The topics covered each week have giving me the opportunity to increasing my knowledge in many areas".

Conclusion

A flipped classroom model was successfully implemented to teach the elective course "Actual problems of pharmacy education", which was offered for first-year pharmacy foreign students at Bogomolets National Medical University for the first time during the fall semester 2021/2022 academic year. This course is the opportunity for foreign pharmacy students to learn about education system of Ukraine and development of pharmacy education (for instance, Bologna Process, the "Law of Ukraine on Higher Education", National Qualification Framework and International Standard Classification of Education) and to learn a lot of useful points for better understanding profession of the pharmacist (for instance, Code of ethics for community pharmacists, seven-star pharmacist concept and eight-star pharmacist concept, leadership competencies, role of chemical and humanities). The responses to survey questions revealed an overall positive attitude of students to the organizing the course and its quality. Students described the course as enlightening, useful and informative.

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