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## **Development of the New Pedagogical Skills in the Context of European Integratio**

**Roman I. Oleksenko**

Dmytro Motorny Tavria State Agrotechnological University, Melitopol, Ukraine

**Olga O. Dolska**

National Technical University “Kharkiv Polytechnic Institute”, Kharkiv, Ukraine

**Maya V. Trynyak**

H.S. Skovoroda Kharkiv National Pedagogical University, Kharkiv, Ukraine

**Olena M. Nesterenko**

Dmytro Motorny Tavria State Agrotechnological University, Melitopol, Ukraine

**Henadii L. Korostylov**

National Technical University “Kharkiv Polytechnic Institute”, Kharkiv, Ukraine

**Abstract**--The processes of globalization and informatization have a great impact on Ukrainian higher education system. In this regard, the problems of European integration of national higher education in the field of international standards occur. This article is aimed at developing a conceptual model of scientific and educational process and pedagogical skills of higher education teachers based on European integration. The necessity of using the innovative approach and the need to improve the capacity of universities to implement research and development technologies at the national level were emphasized. Innovative model of development of pedagogical skills of higher education teachers based on European integration was formed. Criteria for assessing the level of motivational and value component of pedagogical skills of the teacher were identified. The advantages and disadvantages of the development strategy of Ukrainian universities in the context of the needs of European integration of scientific and educational space were defined. It was concluded that the participation of teachers in promising research and competitions will ensure a steady increase in public funding for research in universities. The national higher education of Ukraine should be an open dynamic system.

**Keywords**---educational technologies, higher education management, level of motivation, national higher education.

## Introduction

Dynamic changes in Europe and the world (globalization of cultural processes; informatization of all spheres of life; strengthening of migration processes, etc.) and Ukraine's desire to integrate into the EU necessitate appropriate changes in the higher education system. Enabling European integration for the Ukrainian higher education system should focus on the core values of Western culture (parliamentarism, human rights, minority rights, liberalization, freedom of movement, freedom of higher education at any level, lifelong learning, etc.), which can prepare a new generation teachers with a progressive vision of pedagogical skills in the educational and scientific process (Oudeyer et al., 2016; Pryanichnikov et al., 2015; Yilmaz & Bayraktar, 2014). In the context of integration into the European space to improve the pedagogical skills of teachers with high scientific potential, the state should use internationalized forms of international influence on research functions, taking into account the components of university management to prepare competencies for successful research in a multilingual environment, academic mobility of professional teachers. At the same time, mobile solutions for the development of pedagogical skills should not contradict global and European trends, which in the absence of systematic research data should encourage the development of new principles of European higher education, forming mechanisms for innovative training of teachers.

Unfortunately, the conservatism of higher education management in society does not allow regulating the social demand for pedagogical skills of teachers of the new formation, while the dynamics of processes requires the construction of a new European model of higher education to train high-level scientists (Ramos et al., 2015; Adomšent et al., 2014; Djumabaeva & Kengboyeva, 2021). Therefore, given the multifaceted nature of the problem of national higher education of any country in the European educational and scientific space, necessitate reforming the existing format of methodological support of the scientific and educational process and improving the components of pedagogical competence and skills.

Problems of European integration of national higher education in the field of international standards, as well as in the context of modern civilizational changes, identifying the main trends in education in the EU were studied in the works of Andrushchenko (2012); Artomov & Vashchuk (2011), Bakirov (2009); Brandenburg & Federkeil (2007); Bykov & Zhuk (2003); Debych (2015); Havryliuk et al. (2008); Hubanova (2016); Vozniak (2016). Peculiarities of university activity in the context of globalization and informatization of higher education, the main mission of which is the generation of progressive ideas aimed at preserving the scientific elite, were studied by such scientists as: Cherepanov (1989); Kalinicheva (2010); Kolomiets et al. (2017); Kyrychenko & Lukianykina (2014); Scott (1988); Zavalevskiy (2016); Zhyzhko (2010); Zolotarova & Shosha (2015); development of innovative educational processes in the context of continuity of dialogue of cultures, development of spiritual potential of society were studied by Buchberger (1994); Fedirchuk (2009); Konovalchuk (2012); Kucheriavyi (2011); Lavrinenko

(2009); Lazarenko (2018); Maikovska (2014); Marynovska (2007). The theoretical basis of modern scientific approaches to the disclosure of the essence of the components of pedagogical competence and skill is in the researches of Akerlind (2007); Brawner et al. (2002); Brookfield (1995); Burns & Haydn (2002); Gross et al. (1971); Kaidalova (2011); Kyiveryalg (1980); Soldatenko & Semenoh (2008). However, it should be noted that the need to update the system of pedagogical skills of teachers of different profiles based on the European integration movement is insufficiently studied in theoretical, methodological and practical aspects. The priority of our study is to develop a conceptual model of scientific and educational process and pedagogical skills of higher education teachers based on European integration, taking into account the conditions of deepening cooperation aimed at implementing the European vector of academic mobility, modernization and expansion of the university community in international communication.

## **Methodology**

Theoretical and methodological principles of development of pedagogical skills of higher education teachers based on the needs of renewal and European integration movement are based on the system-forming criteria of the innovative model of educational and scientific environment and are embodied at the state level. The basis for this is the European concept of higher education development. The methodology of pedagogical systems and theories of higher education development is formed on the basis of tasks that, first, allow using the empirical data and theoretical information of international organizations, thus enabling the coordination of scientific activities in different countries. Secondly, they outline the possibilities of adapting the European experience to the national system of higher education, in line with global trends, preserving cultural traditions, creating favorable conditions for the export of scientific and educational services (Andrushchenko, 2012; Khamdun et al., 2021).

Priority areas of the national strategy for the development of higher education and pedagogical skills of teachers provide regulatory levers of state policy in this area, namely: personal orientation of education; formation of national and universal values; development of education as an open state and social system; creating equal opportunities in education; constant improvement of the quality of education, social status and professionalism of higher education teachers; strengthening state and public support for the scientific environment; introduction of educational innovations and information technologies; development of national higher education at the European level (Figure 1).

The need for the European integration movement in the scientific and educational space is due to the personality-oriented methodology of pedagogical skills, which provides a platform for interrelated approaches to update the national paradigm of development of higher education teachers (Figures 2-3). It should be noted that the innovative approach is dominant in government documents of the international scientific and educational space, which emphasizes the need to improve the capacity of universities to implement research and development technologies at the national level.

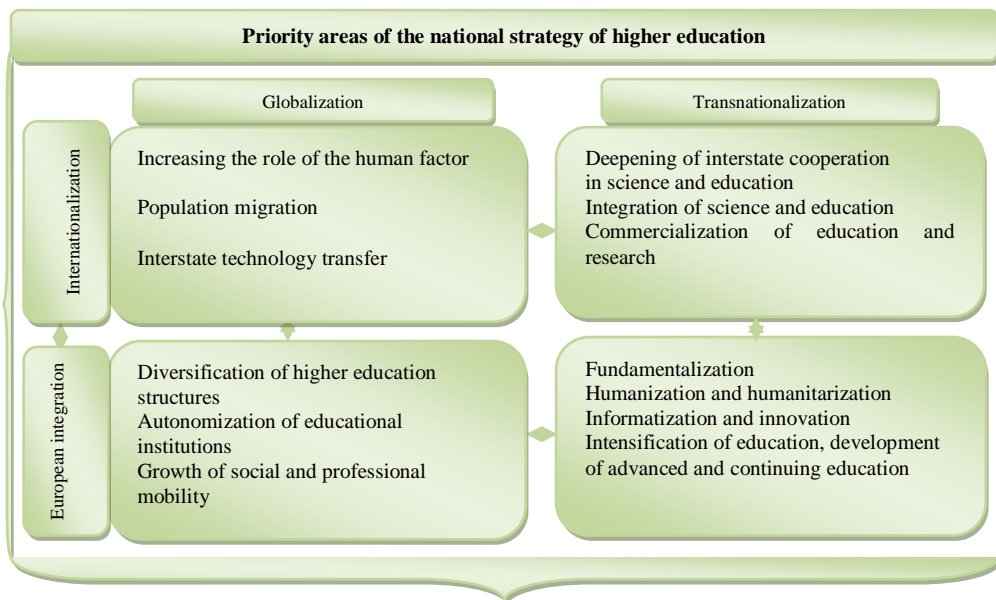


Figure 1. Priority directions of the national strategy for the development of higher education based on the needs of European integration in the scientific and educational space



Figure 3. Updated paradigm of development of pedagogical skills of higher education teachers based on the needs of European integration of scientific and educational space

Innovative model of development of pedagogical skills of higher education teachers based on European integration is formed on practical aspects of the European scientific environment and allows providing universities with a qualitatively new concept based on philosophical vision and understanding of innovation-oriented and creative role of the individual in the state (Figure 4).

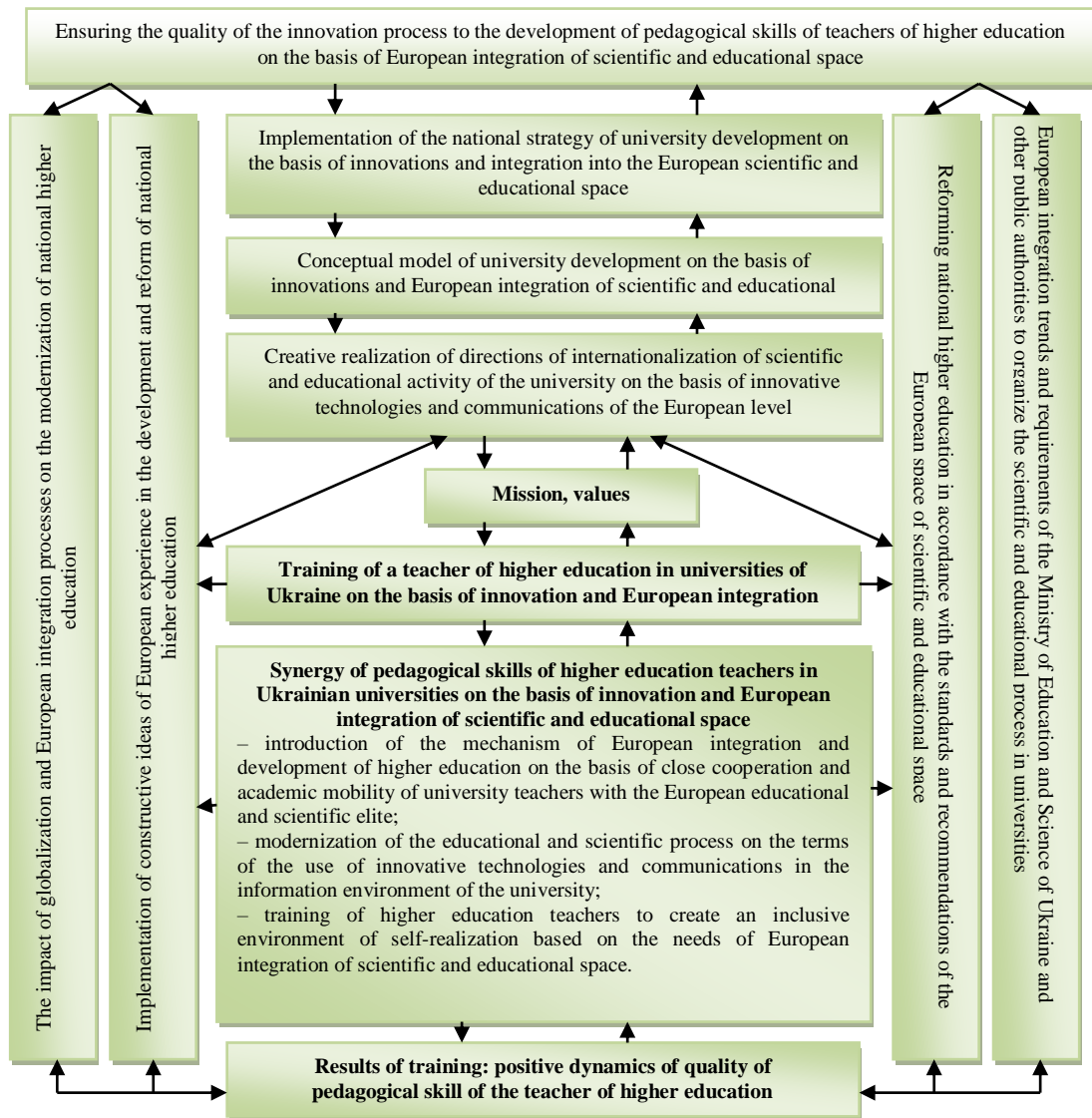


Figure 4. Conceptual model of development of pedagogical skills of teachers in universities of Ukraine in the context of European requirements to scientific and educational process



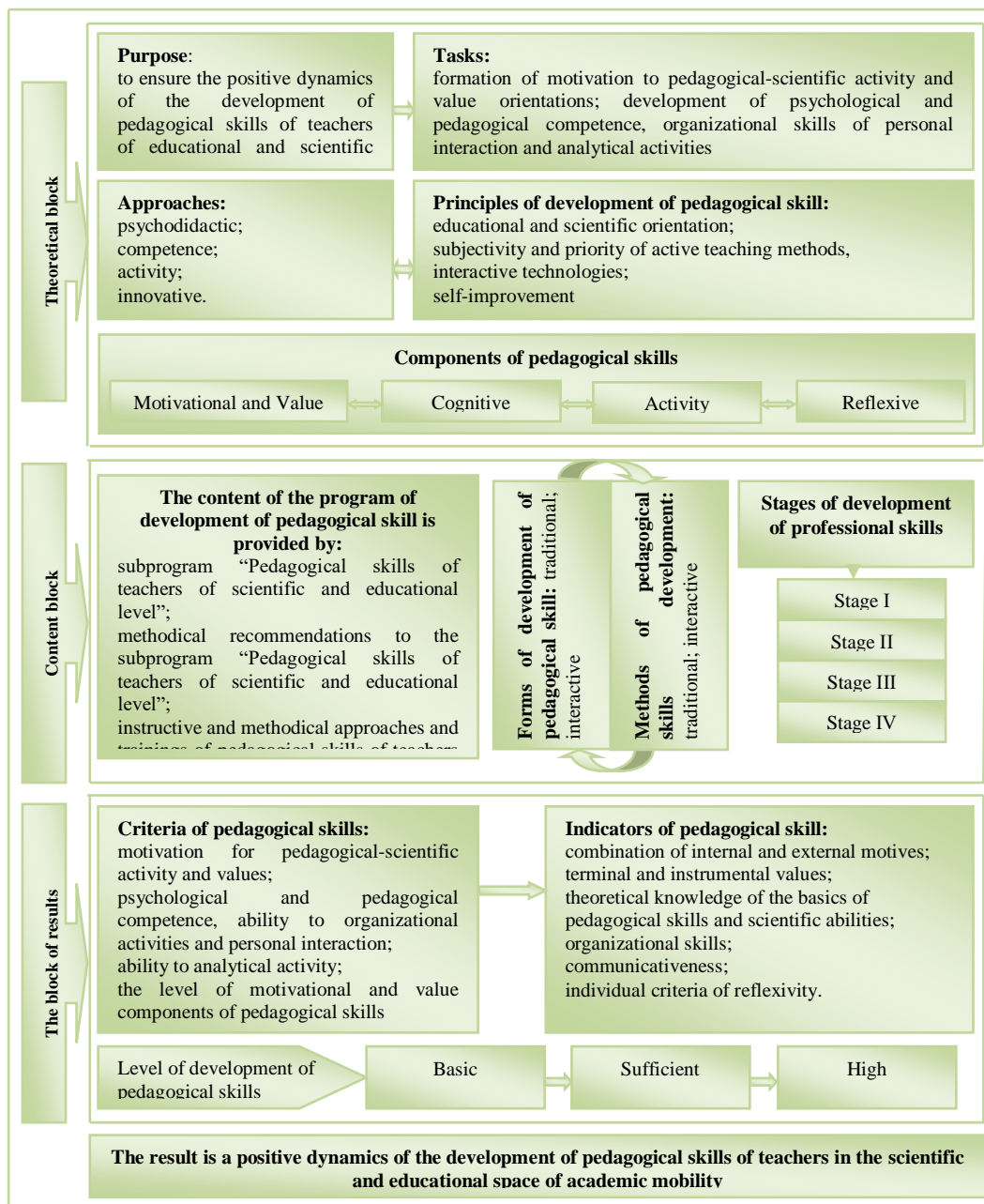


Figure 5. Structural and functional model of development of highly qualified pedagogical skills of teachers in the scientific and educational space of academic mobility

The model is an open system that allows the relationship between the possibility of self-realization of scientific and educational potential of the teacher both within the university environment and outside it, given the realities of socio-economic reality in the country and in the EU. The model is implemented based on

integration of innovative technologies and communications and is sensitive to the needs of the market of diversified educational and scientific services in changing economic conditions. It provides natural adaptation to changes in the European environment, forming a corporate culture of communication of the educational and scientific community, creating on the basis of universities favorable conditions for pedagogical skills of teachers and their academic mobility, modernizing and expanding representations in the international space.

We have proposed a methodical approach to the training of a teacher-researcher who is able, on the basis of rethinking the existing and new holistic opportunities, to perform fundamental scientific developments. Systematic implementation of the latest fundamental scientific developments in academic disciplines encourages the improvement of existing information and communication technologies, which form a meaningful component of the organization of scientific and educational process and stimulate the teaching staff of the university to self-realization in research and innovation (Kozlovskiy, 2012; Maikovska, 2014; Debych, 2015). A structural and functional model of teacher training of highly qualified pedagogical skills has been formed, which ensures the unity of components, principles, forms, methods of gradual development of educational and scientific potential of an individual according to individual criteria and indicators (Figure 5).

The scientific and educational potential of the teacher according to individual criteria of reflectivity allows to reveal own motives, the purposes, a mental and emotional condition, style of behavior and strategy of the activity. According to the method of diagnosis of the individual measure of expressed reflexivity (Brookfield, 1995; Karpov, 2003), the level of the reflexive component of the pedagogical skills of the teacher is determined by 27 criteria of psychological consciousness. The effective component of the calculation, which exceeds 140 points, indicates a high level of awareness of the teacher about the persistent and conscious to performance of duties in educational and scientific activities. The level of reflexivity in the range from 114 to 139 points is sufficient if the teacher is aware of his own actions, emotions, understands the real state of the situation and his attitude to it. Limit criteria of the indicator from 0 to 113 points give grounds to consider it basic (that is, the person lacks awareness of motives of the behavior, low level of subjectivity, inability to form strategy of the activity, independently to organize actions and to estimate them in compliance with the goal, willingness to submit to external influences).

Based on the methods of determining “Motivation of professional activity” (Bordovskaya & Rean, 2001), “Values orientation” (Rokeach, 1973), the level of motivational and value component of pedagogical skills of the teacher is calculated, which is based on the concept of external and internal motivation. We should note that the prerequisite for the internal motivation of the teacher is his desire for external self-realization – the implementation of educational and scientific activities for other needs, outside the content of the activity (achieving prestige, earning money and others).

It is proposed to assess the level of motivational and value component of pedagogical skills of the teacher in the range from 1 to 5 points (Table 1). The

system of values is determined for the meaningful self-realization of the teacher's pedagogical skills and his attitude to the environment with which he interacts, and scientific and educational activity (Cleary & Chen, 2009; McAdam & Seales, 1969; Pucciarelli & Kaplan, 2016).

Table 1  
Criteria for assessing the level of motivational and value component of pedagogical skills of the teacher

No	Motive of pedagogical skills	Not important at all	Not important	Not very important	Important	Very important
1	Money earnings	The level of motivational and value component of the teacher's pedagogical skill is the ratio of indicators of internal motivation (IM), external positive motivation (EPM) and external negative motivation (ENM).				
2	Aspiration for career growth	Indicators are calculated by the following formulas: IM = (evaluation item 6 + evaluation item 7): 2; EPM = (evaluation item 1 + evaluation item 2 + evaluation item 5): 3; ENM = (evaluation item 3 + evaluation item 4): 2.				
3	Aspiration to avoid criticism from colleagues	The indicator of the level of each type of motivation is the number from 1 to 5 (possible fractional value).				
4	Aspiration to avoid possible punishments or troubles	The high level of motivational-value component is equal to the following: IM > EPM > ENM; IM = EPM > ENM.				
5	Need for achievement of social prestige and respect from others	Sufficient level of motivational-value component: IM > ENM > EPM; EPM > ENM > IM.				
6	Satisfaction with the process and result of activity	Basic level of motivational-value component: ENM > EPM > IM; ENM > IM > EPM.				
7	Possibility of the fullest self-realization of pedagogical skills					

Ranking of values of pedagogical skill is carried out according to 36 criteria (Figure 6). Criteria are evaluated from 1 to 6 points. A high level of pedagogical skills is considered to be in teachers who have from 9 to 12 of competence of the first level of skill. A sufficient level is formed from 5 to 8 of value components of the first level, the basic level – from 1 to 4 of competencies of the first level. Determining the level of the formed component of the analytical activity of the teacher is carried out by means of express diagnostics (Fetiskin et al., 2002), which embodies the calculation of the indicator of organizational abilities, the high level of which has limits – 70% (a teacher is involved in the preparation and organization of public events, able to make decisions in difficult situations, proactive in communication, constantly expands the range of professional communication, helps relatives and friends).



The ability indicator in the range from 40 to 70% is sufficient. The respondent seeks contact with people, without limiting the range of his acquaintances, defends his opinion, plans his work, but the potential of these abilities does not have a high level of stability. The ability indicator below 40% is characterized as basic. The teacher does not seek to communicate, feels uncomfortable in the new team, limits his acquaintances, prefers to spend time alone, has difficulty establishing contacts with the audience, poorly oriented in an unfamiliar situation, does not defend his opinion, has difficulty experiencing insults; the level of initiative is low, avoids making independent decisions).

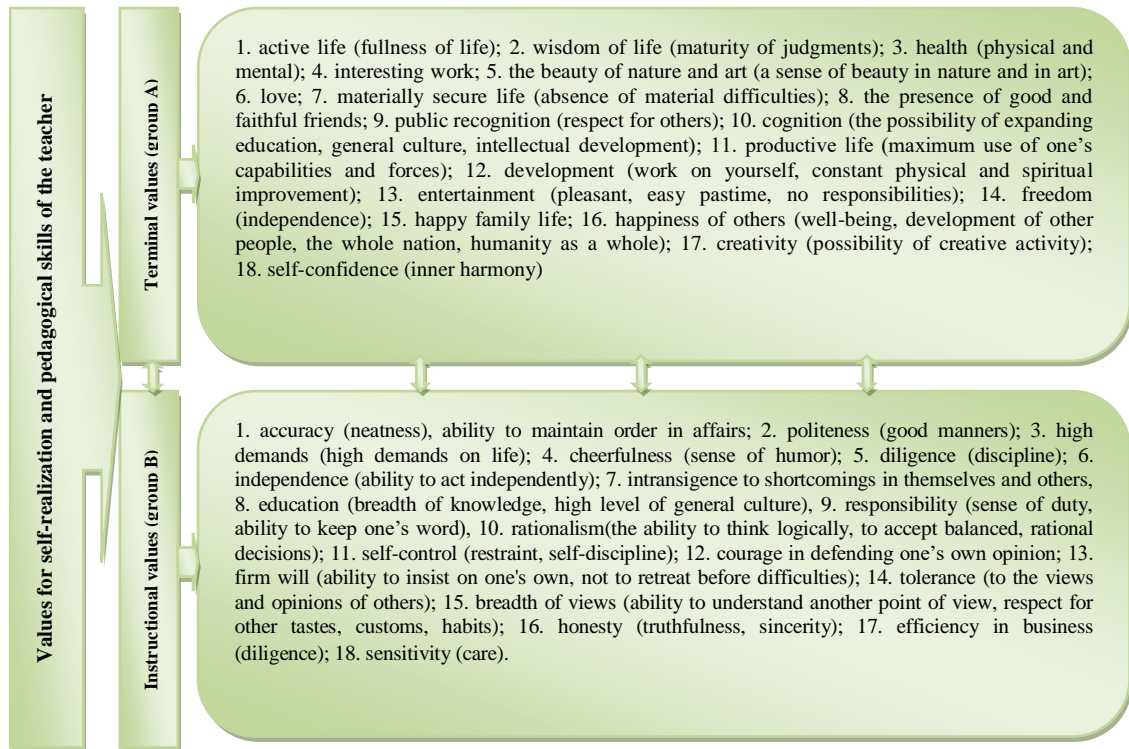


Figure 6. Values of self-realization and pedagogical skills of the teacher

Source: developed by the authors based on data (Rokeach, 1973; Brookfield, 1995; Bordovskaya & Rean, 2001; National strategy for the development..., 2013; Zavalevskiy, 2016)

The method of assessing the level of communicativeness (Fetiskin et al., 2002), allows determining the capabilities of the teacher in relation to his characteristics of communication in the scientific and educational space. Thus, a high level of communication is determined by obtaining from 4 to 13 points; sufficient level – from 14 to 24 points; basic level – from 25 to 32 points; low level – from 0 to 3 points. Thus, experimental testing of the proposed model allows predicting the growth of pedagogical skills of teachers, their motivation for further professional success, creativity, critical attitude to the organization of scientific and educational process, taking into account integrated criteria in national higher education of the European system (Shriberg, 2002; Roblyer et al., 2010).

## Results and Discussion

An effective tool for the transfer of new knowledge, advanced scientific, didactic and managerial technologies, which allows to bring the national scientific and educational sphere to the world mainstream is academic mobility, which is a prerequisite for the European integration process. It requires intra-university regulatory support, implementation of forms of international interuniversity cooperation, organization of joint research projects, exchange programs for cooperation with a foreign scientific society to improve the pedagogical skills of teachers of the new formation. Unfortunately, the financial condition of Ukraine now does not allow counting on its more active participation in supporting mobility. We offer an oriented list of documents required for the effective implementation of academic mobility (Figure 7).

These documents define clear mechanisms for the implementation of each process of academic mobility; provide clarifications on the statute and procedure of all subjects of international cooperation between Ukrainian and European universities. Thus, during 2015-2019, Ukrainian universities have been working with the British Council in Ukraine to participate in the piloting of experimental programs on foreign language teaching methods, within the project “Pedagogical skills of teachers of the new formation”, in compliance with European standards and recommendations on quality of higher education. The results of monitoring the pilot programs proved its effectiveness, as they are aimed at the development of modern individual competencies of the teacher – self-realization of one's own intellectual potential, critical thinking in intercultural communication. In addition, every year the British Council in Ukraine grants universities the right to use the world-famous Teacher Training Journal in the scientific and educational process, which costs 496 pounds (approximately 685 thousand USD). Highly qualified teachers of Ukrainian foreign language universities traditionally undergo professional retraining in the “Schools of Professional Skills” of the British Council in Ukraine (Bykov & Zhuk, 2003).

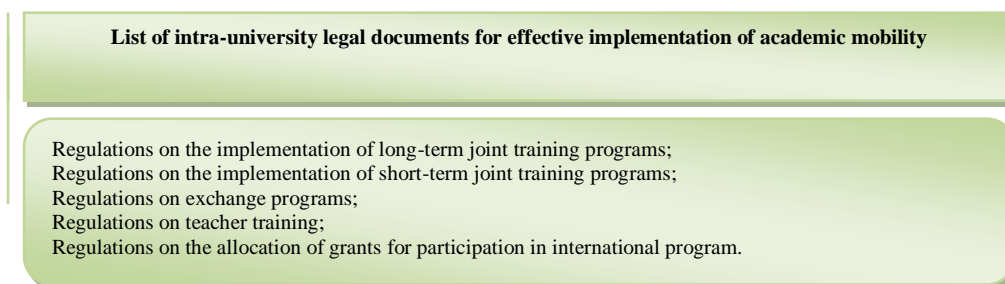


Figure 7. Internal regulatory support of academic mobility of the universities of Ukraine in the context of the European integration process

The cooperation of Ukrainian university teachers with the Goethe Institute (Germany), which has a network of accredited partners – German Language Centers on the basis of German and Slavic philology departments, is fruitful, providing professional development of university teachers based on methods that meet international standards. With the participation of socio-cultural projects, on the basis of modern German methodological literature, teachers improve their

skills and qualifications (participation in seminars, workshops and conferences in Germany and Ukraine) and are in great demand in the labor market. Cooperation with partners of the Goethe Institute enables international scholarships for participation in methodological seminars on didactics (Schwabisch Hull, Germany) and projects for the implementation of the international program “Learning to Teach German” (DLL), which integrates an innovative approach to research within activities “learning by doing” and has high requirements for the qualification of German language teachers, based on the methodology of teaching foreign languages (Havryliuk et al., 2008).

As part of this cooperation, the Goethe Institute trains DLL-trainers (multipliers), who then provide online support and test the methodological support “Learning to Teach German” in classrooms, provide opportunities to improve the skills of teachers of the partner university, issue certificates if the course program is successful. Accordingly, Ukrainian universities are integrating cooperation with the Goethe Institute through the involvement of higher education students in the study of the course “German as a Foreign Language”, which helps to increase the cognitive activity of future DLL-trainers (multipliers). In addition, they authorize the collection, use and processing of legally protected personal data of applicants required for certification at the Goethe Institute (Havryliuk et al., 2008).

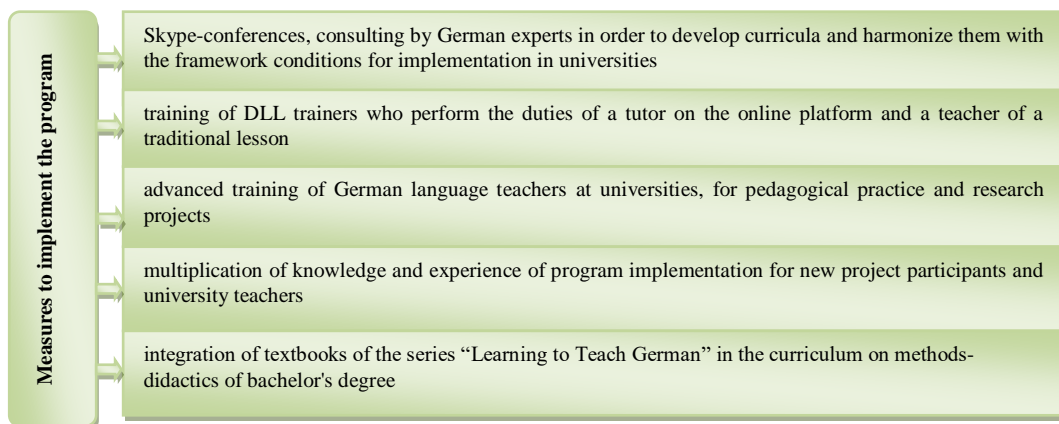


Figure 8. Innovative approach to the implementation of the program “Learning to Teach German” (DLL) in Ukrainian universities within the European integrated scientific and educational space

Source: developed by the authors based on data (Havryliuk et al., 2008; Lazarenko, 2018)

In 2015-2019, internships of higher education teachers are organized in the universities of Ukraine on the basis of the following European universities: Pan-European University (Bratislava, Slovakia); Southeast University of Missouri (Cape Girardeau, USA); Danubius University (Sladkovicevo, Slovakia); Karkono High School (Jelenia Góra, Poland); Goethe-Institut (Hamburg-Berlin, Germany); Ofri Training Center (Jerusalem, Israel); Cardinal Wyszyński University (Warsaw, Poland); International Institute of Innovation, Science, Education and Development (Warsaw, Poland); Higher School of Economics (Bydgoszcz, Poland); SAS Opti-Nutri Enterprises (Sergi, La Chauviniere, France); Jagiellonian

Collegium of Torun Higher School (Torun, Poland); Old Polish University (Kielce, Poland); John Paul II Catholic University (Lublin, Poland); West Finnish College (Guittinen, Finland); Maria Grzegorzewska Academy of Special Pedagogy (Warsaw, Poland); Technical University (Darmstadt, Germany); Institute for Advanced Training of Charles University (Prague, Czech Republic); North American Scientific Society (Ottawa, Canada) (Figure 8) (Lazarenko, 2018). The structural distribution of teachers of Ukrainian universities undergoing internships in EU countries is presented in Figure 9.

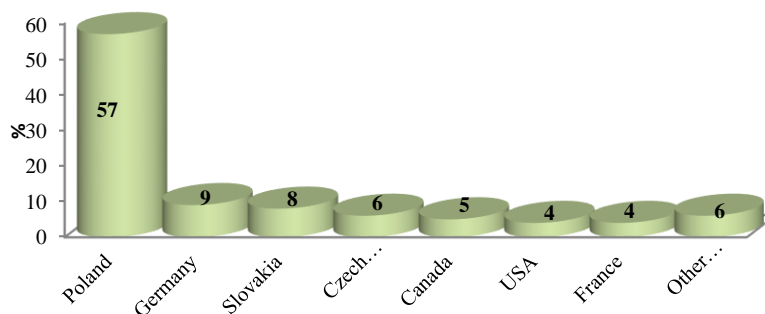


Figure 9. Structural distribution of teachers of Ukrainian universities undergoing internships in EU countries, %

Source: calculated by authors based on data (National strategy for the development..., 2013; Lazarenko, 2018; "Introduction. EDUCATION.UA"..., 2019)

The result of the internship of teachers of the Ukrainian national universities is the demand of modern society and the requirements of European universities for the modernization of curricula and programs. This is a joint international work to improve the scientific and educational process. In addition, European universities and other countries create the most comfortable conditions for teaching and research in laboratories with the latest technology. Cooperation of national universities with European ones, within the framework of the national strategy for the development of higher education, allows innovative communications for project activities to be widely used in the educational process ("Introduction. EDUCATION.UA"..., 2019).

The dynamics of the development of foreign internships by teachers of Ukrainian universities is presented in Figure 10. It should be noted that in Ukraine, at the state level, a national database has been created on the training of teachers abroad in European universities, in order to monitor the implementation and development of the academic mobility program. Undoubtedly, in the process of integration of Ukrainian universities into the European scientific and educational space, the quality criteria for the development of research projects increase, which is an important tool for building global scientific potential and enriching intellectual capital with academic and cultural experience.

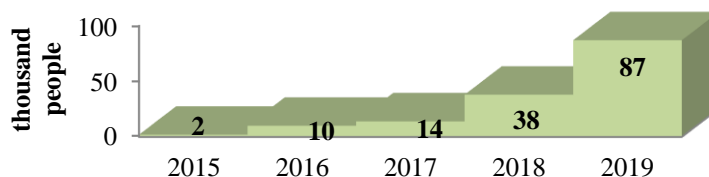


Figure 10. Abroad internship of teachers of Ukrainian universities in EU countries for the period 2015-2019, thousand people

Source: calculated by authors based on data (National strategy for the development..., 2013; Lazarenko, 2018; “Introduction. EDUCATION.UA”..., 2019)

The ranking of higher education institutions (HEIs) TOP-200 is assessed using an aggregate indicator (integrated index), which is formed on the basis of indicators of direct measurement (80%), expert assessment of the quality of training of higher education students by employers and academia (15%), as well as using international scientometric and webometric data (5%). These indicators determine the generalized values of three criteria: assessment of the quality of scientific and pedagogical potential, assessment of the quality of education, assessment of international recognition, and their sum is presented as an assessment of the integrated indicator of free economic activity (“Introduction. EDUCATION.UA”..., 2019). One of the main trends in the ranking of the TOP-200 universities is to find a balance between the creation of new, critical knowledge, research and innovation and the practical transformation of these developments in the development of modern society (Table 2). Publication activity of teachers of the Universities of Ukraine in scientific publications indexed in the Web of Science database, is presented in Figure 11.

Table 2

The best universities of Ukraine according to the results of pedagogical skills of teachers (rating TOP-200), for the period 2018-2019

University	Place in the rating		Place in the general rating		TOP-200 of Ukraine		Scopus		External evaluation score for the contract		Final score		
	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019	
M.P. Drahomanov National Pedagogical University	1	1	49	44-45	21	30	99	66	81		105	201	201

Volodymyr Hnatiuk Ternopil National Pedagogical University	2	2	55	54-55	104	115	54	60	66	57	224	232
K.D. Ushynsky South Ukrainian National Pedagogical University	4	4	63	79	69	84	42	157	144	51	255	292
H.S. Skovoroda Kharkiv National Pedagogical University	5	5	69	84	100	113	70	110	100	81	270	304
Ivan Franko Drohobych State Pedagogical University	6	3	106	73	160	123	60	108	120	42	340	273

Source: calculated by authors based on data ("Introduction. EDUCATION.UA"..., 2019)

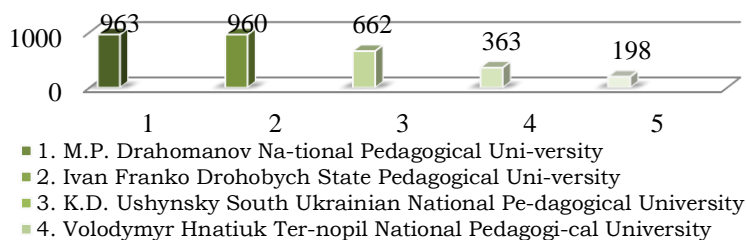


Figure 11. The best universities of Ukraine in terms of the number of publications indexed in the Web of Science database

Source: calculated by authors based on data ("Introduction. EDUCATION.UA"..., 2019)

It is important for the strategy of developing high-quality pedagogical skills of university teachers to implement monitoring of the stages of their scientific work (Figure 12), as the actual course of organization of the scientific process in the information-scientific environment (ISE) may differ significantly from the designed one.

The results of the monitoring of the implementation of ISE in Ukrainian universities prove that the integration of the national scientific process into the European system of innovative technologies should be implemented not by increasing the burden on teachers, but by bringing the structure of this burden to European integration requirements of teachers, taking into account individual capabilities and creative ideas to self-development and achieving a highly qualified level of competence in science and education.



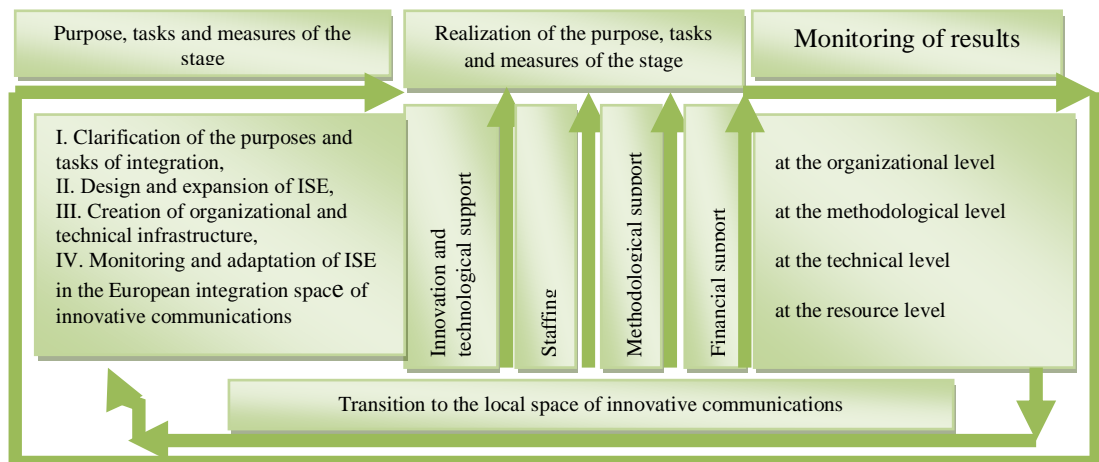


Figure 12. Monitoring of stages of integration of information-scientific environment (ISE) of Ukrainian universities into the European system of innovative communications

The system of improving the pedagogical skills of teachers of Ukrainian universities, according to the objects of the local life situation, which corresponds to the personal level of activity and consists of psycho-physiological, socio-psychological, cultural and educational factors of personality, requires a criterion apparatus of the phenomenon (Kucheriavyi, 2011). Therefore, taking into account all factors, a methodical approach to the development and implementation of a system for improving the professional skills of Ukrainian university teachers in terms of European integration and development of university development strategy is based on the internationalization of research and educational activities. An expert evaluation was conducted according to the method (Zhyzhko, 2010). An expert group was created to carry out an intuitive and logical analysis of the components of the conceptual model and system of improving the pedagogical skills of teachers of Ukrainian universities on quantitative and qualitative indicators, which are calculated by formula (1) (Zolotarova & Shosha, 2015):

$$N = \frac{j \times d^2}{4Q^2} \times (1 - g) \quad (1)$$

where,  $j$  – is the coefficient, which for  $0.8 < g < 0.99$ , in our case is 0.97;  $d$  – the scope of individual assessments;  $g$  – the probability of sufficiency of cases; ( $g$  is within  $0.8 < g < 0.99$ );  $\Delta Q$  – the set value of the error of the collective expert assessment.

Qualitative criteria of pedagogical skills of university teachers	Macro-level indicators (higher education system)	the level of implementation of European quality standards in higher education; the level of implementation of strategies and concepts of standardization of professional training of teachers in the context of European integration processes; the level of international cooperation; the level of formed global and pragmatic thinking of teachers of Ukrainian universities; the level of interaction of the scientific and educational environment of universities with other environments within the regional and global scientific and educational space; the level of involvement of leading teachers from European universities and scientists from other universities in the universities of Ukraine on the basis of the European integration process
	Mezo-level indicators (universities)	the level of functionality of higher education forms; the level of preservation of basic educational values and overcoming the negative impact of the commercialization of higher education; the level of preservation of ethno-cultural heritage and national values in the context of internationalization of higher education; the level of openness of the information scientific environment of the university; the level of increasing the level of preparation of scientific projects of teachers; the level of functionality of scientific activity in the educational environment of the university
	Micro-level indicators (subjects of the scientific and educational process)	the level of improving the quality of scientific and educational services and management of the scientific and educational process; the level of resource provision of the scientific and educational process to the demands of applicants for the level of "bachelor", "master" and teachers in the European integration space; the level of pedagogical skills of the teacher in the scientific and educational environment; the level of comfort and mutual understanding between the subjects of scientific and educational environment

Figure 13. Qualitative criteria of pedagogical skills of teachers of Ukrainian universities at the macro-, mezo- and macro-level

It is determined that for the reliability of expert assessment at the level of probability of sufficiency of cases  $g=0.97$  not less 20 experts are required. Two groups of experts have been created: 1 group – representatives of five higher educational institutions (19 experts from among scientific and pedagogical workers); the second group – representatives of organizations of professional associations for the training of teachers of pedagogical skills (6 experts). Assessment of qualitative criteria of pedagogical skills of teachers in Ukrainian universities on the basis of European integration was carried out at three levels (Figure 13).

According to the results of expert evaluation, the positive and negative manifestations of the development strategy of Ukrainian universities in the context of the needs of European integration of scientific and educational space were defined (Figure 14).

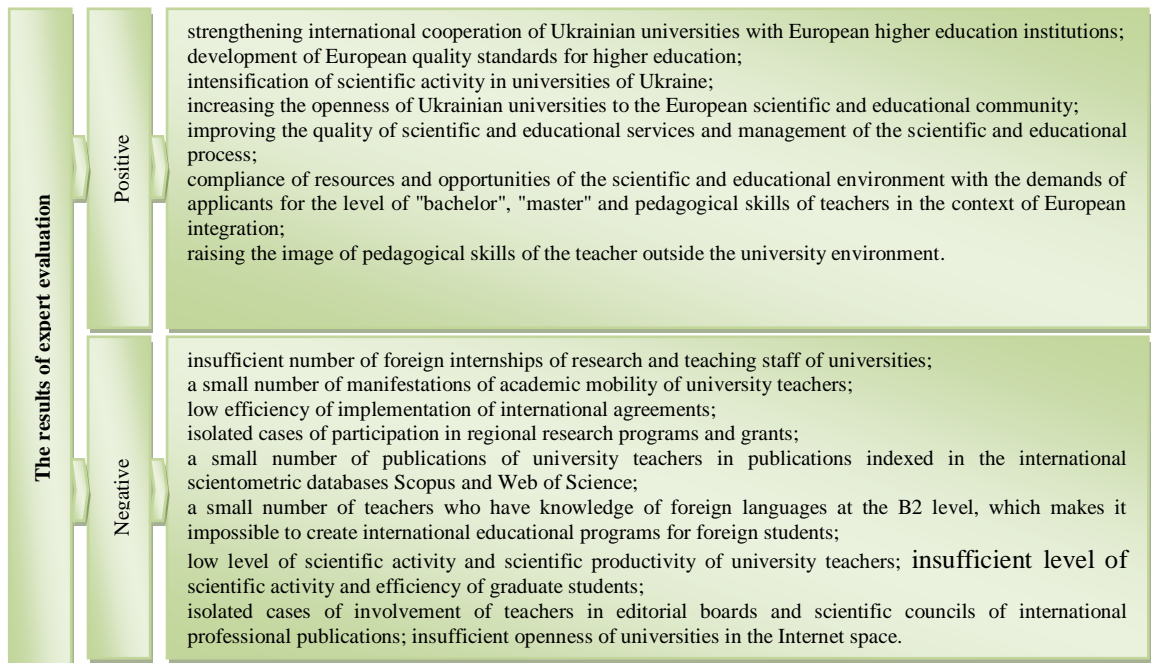


Figure 14. Results of expert evaluation of the development strategy of Ukrainian universities in the context of the needs of European integration of scientific and educational space

Thus, the analysis of the results of expert evaluation made it possible to identify the main factors influencing these phenomena: the lack of quality rating assessment of the activities of research and teaching staff; lack of mechanisms to encourage teachers for scientific activity and productivity; ignorance of the vast majority of teachers about the European requirements for the university; insufficient awareness of teachers about international scientometric databases; lack of need, motivation and financial conditions for scientific internship abroad; availability of only a few Ukrainian professional publications indexed in the databases Scopus and Web of Science; low demand for university teachers in the international labor market.

In order to develop the information and scientific environment in the infrastructure of Ukrainian universities, taking into account the intellectual abilities of teachers, introducing progressive ideas into scientific activities, we have proposed criteria and indicators of their individual scientific rating (Table 3).

Table 3  
The proposed criteria and indicators of individual science ranking of teachers in universities of Ukraine

No	Name of nomination and criteria	The sum of points for the criterion
I. Preparation of dissertations. Obtaining academic titles		
1	Defense of the doctoral dissertation	300

2	Advising on doctoral dissertations (doctoral defense)	150
3	Defense of the candidate's dissertation	150
4	Supervising of candidate dissertations (postgraduate defense)	75
5	Obtaining the title of professor (SAC)	200
6	Obtaining the title of associate professor (SAC)	100
7	Obtaining the title of university professor	100
8	Advising on doctoral dissertations (during the applicant's doctoral studies)	20
9	Supervising of candidate dissertations (during postgraduate studies in graduate school)	10
<b>II. Scientific research work</b>		
1	Management of the state budget topic financed by the Ministry of Education and Science of Ukraine	200
2	Participation in the state budget topic funded by the Ministry of Education and Science of Ukraine	60
3	Management of economic contract topic (startup)	150
4	Participation in the economic contract topic (startup)	50
5	Participation in the implementation of the cooperation agreement: international	50
	domestic	25
6	Management of the grant project of the regional (city) level	150
7	Participation in the grant project of the regional (city) level	50
<b>III. Research work and innovation</b>		
1	Scientific works awarded state prizes	250
2	Scientific works awarded industry prizes	150
3	Introduction of scientific research in production	50
4	Acts of introduction of scientific researches in educational process	10
5	Author's certificates	25
6	Patents, inventions and utility models	30
7	Advanced training (internship)	20
8	Economic effect (USD 3.6 thousand per group)	150
9	Preparation of projects for participation in the competition of state budget research (MES) and grants in Ukraine	100
<b>IV. Representation in scientific metric bases</b>		
1	The number of citations in Google Scholar per year	1 citation – 1 point
2	Total number of citations in Scopus + Web of Science	1 citation – 5 points
3	H-index in Google Scholar	1 value – 5 points
	h – index	1 value – 2 points
	10 – index	1 value – 2 points
4	The total number of citations in Google Scholar	1 citation – 0.1 points
5	Number of citations in Scopus (Web of Science) – per year	1 citation –

6	Total number of teacher publications in Scopus and Web of Science (total)	5 points 1 citation – 20 points
7	H-index in Scopus	1 value – 20 points
8	H-index in Web of Science	1 value – 20 points
<hr/>		
V. International scientific activity		
1	Joint publications with foreign scientists	1 publication – 15 points
2	Joint publications of scientific works with foreign organizations: monographs, collections of articles (published abroad in the EU language)	1 publication – 50 points
3	Joint publications of scientific works with foreign organizations (published in Ukraine)	1 publication – 25 points
4	Participation in editorial boards of foreign publications or indexed by Scopus and Web of Science	25 points
5	Foreign business trips to participate in scientific conferences, seminars, webinars	1 відрядження – 30 points
6	Speech at plenary and breakout sessions at international scientific conferences, seminars, webinars (held abroad): - plenary session - section meeting	50 points 25 points
7	Internship in foreign organizations (according to the program not less than 108 hours)	75 points
8	Internship in foreign organizations (less than 108 hours per program)	25 points
9	Internships in foreign educational institutions and organizations online	25 points
10	Teaching in foreign educational institutions and organizations	1 hour – 5 points
11	Registration of projects (applications) for participation in international grants	100 points to developer
12	Participation in international grants	100 points to developer

It should be noted that the implementation of the results of the conceptual model and strategy of improving the pedagogical skills of teachers of Ukrainian universities on the basis of European integration, will contribute to the growth of funding for research (Figure 15).

Thus, the participation of teachers in promising research and competitions will ensure a steady increase in public funding for research in universities. It will invent measures to improve the competitiveness of each teacher by publishing research results in foreign and Ukrainian international publications, in the scientometric database Scopus and Web of Science and to increase the number of copyright certificates, patents for the results of intellectual development.

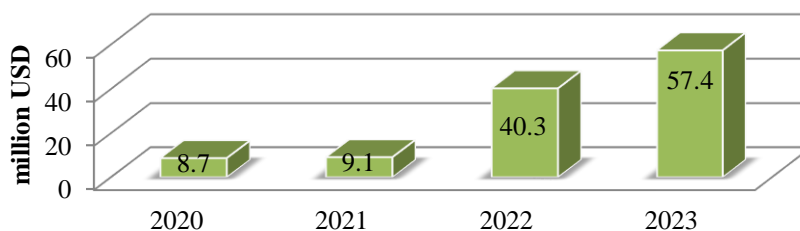


Figure 15. The amount of funding for research activities of teachers of Ukrainian universities for 2020-2023, million USD

Source: calculated by authors based on data (National strategy for the development..., 2013; "Introduction. EDUCATION.UA"..., 2019)

## Conclusions

Determining the prospects for the development of pedagogical skills of teachers in Ukrainian universities in the context of the needs of European integration research and educational space proves that the model of standardization strategy of the national higher education system is complicated, a number of new requirements for research and teaching staff becomes bigger. Given the globalizing changes in the modern world and the transformational changes taking place in the system of science and education under the pressure of European integration processes, it is necessary to build a dynamic model of a new teacher for a united Europe. Such a model cannot be static for a long period of time, as it must take into account the changes taking place in society, as reforms affect not only the entire training system, but also the individual teacher. Accordingly, it is necessary to emphasize not only the qualifications of the teacher as an individual, but also the qualifications of the university as a whole. In view of this, the national higher education of Ukraine should be an open dynamic system that should respond instantly to today's demands and be characterized as prognostic.

The identified effects and risks of changes in the pedagogical skills of teachers in Ukrainian universities based on European integration, confirm the correctness of the development strategy of national higher education, and its compliance with the developed conceptual model in the system of professional development. The outlined changes in the Ukrainian scientific and educational space respond to today's demands, but they may be more tangible than the effects.

## References

- Adomßent, M., Fischer, D., Godemann, J., Herzig, C., Otte, I., Rieckmann, M., & Timm, J. (2014). Emerging areas in research on higher education for sustainable development—management education, sustainable consumption and perspectives from Central and Eastern Europe. *Journal of cleaner production*, 62, 1-7. <https://doi.org/10.1016/j.jclepro.2013.09.045>
- Åkerlind, G. S. (2007). Constraints on academics' potential for developing as a teacher. *Studies in higher education*, 32(1), 21-37.



- Andrushchenko, V. (2012). Possibility and reality of the constitutional process in the European space of education. *Higher Education in Ukraine*, 4, 9-12.
- Artomov, I., & Vashchuk, O. (2011). *Conceptual and legal bases of formation of the European educational space*. Uzhhorod: ZakSU.
- Bakirov, V. (2009). World trends in university education. *Sociological Research*, 8, 9-15.
- Bordovskaya, N., & Rean, A. (2001). *Pedagogy*. St. Petersburg: Peter.
- Brandenburg, U., & Federkeil, G. (2007). *How to Measure Internationality and Internationalisation of Higher Education Institutions!: Indicators and Key Figures*. CHE.
- Brawner, C. E., Felder, R. M., Allen, R., & Brent, R. (2002). A survey of faculty teaching practices and involvement in faculty development activities. *Journal of Engineering Education*, 91(4), 393-396.
- Brookfield, S. (1995). Becoming a critically reflective teacher Jossey-Bass.
- Buchberger, F. (1998). Teacher education in Europe: diversity versus uniformity. *European Education*, 30(1), 44-96.
- Burns, B., & Haydn, T. (2002). Engaging teachers in research: inspiration versus the daily grind. *Pedagogy, Culture & Society*, 10(2), 301-321.
- Bykov, V. U., & Zhuk, Y. O. (2003). Theoretical and methodological principles of modeling the learning environment of modern educational systems. *Problems and prospects of forming a national humanitarian and technical elite: Coll. Science. etc*, 1(5), 64-76.
- Cherepanov, V. (1989). *Expert estimates in pedagogical research*. Moscow: Pedagogika.
- Cleary, T. J., & Chen, P. P. (2009). Self-regulation, motivation, and math achievement in middle school: Variations across grade level and math context. *Journal of school psychology*, 47(5), 291-314. <https://doi.org/10.1016/j.jsp.2009.04.002>
- Debych, M. (2015). European approach to the internationalization of higher education. *Higher Education in Ukraine*, 1, 75-80.
- Djumabaeva, J. S., & Kengboyeva, M. Y. (2021). Bilingualism and its importance in human life. *Linguistics and Culture Review*, 5(1), 53-63. <https://doi.org/10.37028/lingcure.v5n1.451>
- Fedirchyk, T. (2009). Development of teacher professionalism as a factor in quality management of higher education. *Science and Education: Scientific and Practical Journal of the Southern Scientific Center of the Academy of Pedagogical Sciences of Ukraine*, (3), 75-79.
- Fetiskin, N., Kozlov, V., & Manuylov, G. (2002). *Socio-psychological diagnostics of the development of personality and small groups*. Moscow: DDT-Faktor.
- Gross, N. C., Giacquinta, J. B., & Bernstein, M. (1971). *Implementing organizational innovations: A sociological analysis of planned educational change*. New York: Basic Books.
- Havryliuk, M., Leshchenko, M., Mahdach, Z., & Mukan, N. (2008). *Education in Europe: Main characteristics*. Lviv: Beskid Bit Publishing House.
- Hubanova, T. (2016). Europeanization of higher education in Ukraine: Current status and prospects. *Administrative Law and Process*, 4(18), 73-80.
- Kaidalova, L. (2011). Improving the pedagogical skills and pedagogical culture of the teacher. *Pedagogical Sciences*, 97, 82-88.
- Kalinicheva, H. (2010). Academic mobility as a component of the European space of higher education. *Higher Education in Ukraine*, 1(19), 143-154.

- Karpov, A. V. (2003). Reflexivity as a mental property and methods of its diagnostics. *Psychological journal*, 24(5), 45-57.
- Khamdun, K., Suparmi, S., Maridi, M., & Rusilowati, A. (2021). Development of vocational science learning devices to improve project based soft skills. *Linguistics and Culture Review*, 5(S1), 201-213. <https://doi.org/10.37028/lingcure.v5nS1.1348>
- Kolomiets, A., Lazarenko, N., & Hromov, Ye. (2017). Conceptual bases of development of scientific activity of pedagogical university at the present stage of development of society. *Educational Space of Ukraine*, 9, 74-80.
- Konovalchuk, I. (2012). *Theoretical and practical aspects of integration of innovative educational processes. Lifelong learning: the requirements of the time*. Kyiv: Edelweiss.
- Kozlovskiy, Yu. (2012). *Modeling of scientific activity of higher educational institution: Theoretical and methodological aspect*. Lviv: Esta-ST.
- Kucheriavyi, O. (2011). The concept of training a teacher-researcher in a classical university. *Native School*, 4-5, 19-26.
- Kyveryalg, A. (1980). *Research methods in professional pedagogy*. Tallinn: Valgus.
- Kyrychenko, K., & Lukianykina, O. (2014). *Integration of Ukrainian higher education into the European educational space. Existential and communicative issues of management*. Sumy: Sumy State University.
- Lavrinenko, O. (2009). *Pedagogical skill in the historical and pedagogical dimension: Theory, practice, progress*. Kyiv: VKZ-Prostir.
- Lazarenko, N. (2018). *Competitiveness of higher education teachers as a requirement of European integration of the modern education system. Continuing education in socio-cultural dimensions*. Kyiv: PT "Sv-Fomer".
- Maikovska, V. (2014). The impact of innovation processes on the transformation of higher education as a social institution. *Pedagogical Sciences: Theory, History, Innovative Technologies*, 1, 227-235.
- Marynovska, O. (2007). Implementation of pedagogical innovations: The system of design and implementation activities. *Image of a Modern Teacher*, 3(72), 34-39.
- McAdam, D. W., & Seales, D. M. (1969). Bereitschaftspotential enhancement with increased level of motivation. *Electroencephalography and clinical Neurophysiology*, 27(1), 73-75. [https://doi.org/10.1016/0013-4694\(69\)90111-4](https://doi.org/10.1016/0013-4694(69)90111-4)
- Oudeyer, P. Y., Gottlieb, J., & Lopes, M. (2016). Intrinsic motivation, curiosity, and learning: Theory and applications in educational technologies. *Progress in brain research*, 229, 257-284. <https://doi.org/10.1016/bs.pbr.2016.05.005>
- Pryanichnikov, V. E., Katalinic, B., Kirilchenko, A. A., Khelemendik, R. V., Kuvshinov, S. V., Vician, D., & Uglesic, A. (2015). New creative educational technologies for inter-university network. *Procedia Engineering*, 100, 259-268. <https://doi.org/10.1016/j.proeng.2015.01.366>
- Pucciarelli, F., & Kaplan, A. (2016). Competition and strategy in higher education: Managing complexity and uncertainty. *Business Horizons*, 59(3), 311-320. <https://doi.org/10.1016/j.bushor.2016.01.003>
- Ramos, T. B., Caeiro, S., Van Hoof, B., Lozano, R., Huisingh, D., & Ceulemans, K. (2015). Experiences from the implementation of sustainable development in higher education institutions: Environmental Management for Sustainable Universities. *Journal of Cleaner Production*, 106, 3-10. <https://doi.org/10.1016/j.jclepro.2015.05.110>

- Roblyer, M. D., McDaniel, M., Webb, M., Herman, J., & Witty, J. V. (2010). Findings on Facebook in higher education: A comparison of college faculty and student uses and perceptions of social networking sites. *The Internet and higher education*, 13(3), 134-140. <https://doi.org/10.1016/j.iheduc.2010.03.002>
- Rokeach, M. (1973). *The nature of human values*. New York, NY: Free Press.
- Scott, P. (1988). *Massification, internationalization and globalization. The globalization of higher education*. Buckingham: Open University Press.
- Shriberg, M. (2002). Institutional assessment tools for sustainability in higher education: strengths, weaknesses, and implications for practice and theory. *Higher education policy*, 15(2), 153-167. [https://doi.org/10.1016/S0952-8733\(02\)00006-5](https://doi.org/10.1016/S0952-8733(02)00006-5)
- Soldatenko, M., & Semenoh, O. (2008). *Development of pedagogical skill of the teacher in the conditions of continuous education*. Kyiv: APN-GDPU.
- Vozniak, O. (2016). Comparative analysis of formal and non-formal education in the context of European integration of educational space. *Higher School*, 2(139), 41-47.
- Yilmaz, O., & Bayraktar, D. M. (2014). Teachers' attitudes towards the use of educational technologies and their individual innovativeness categories. *Procedia-social and behavioral sciences*, 116, 3458-3461. <https://doi.org/10.1016/j.sbspro.2014.01.783>
- Zavalevskiy, Yu. I. (2016). Competitiveness of the teacher as a result of his professional competence. *Bulletin of Alfred Nobel University of Dnepropetrovsk. Series "Pedagogy and Psychology"*, 2, 195-199.
- Zhyzhko, T. (2010). Academic mobility—an objective condition for the development of university education. *Bulletin of the Institute of Child Development. Series: Philosophy. Pedagogy. Psychology*, 10, 6-10.
- Zolotarova, I., & Shosha, Zh. (2015). Development of internationalization of the university in cooperation with the European Higher Education Area. *High School*, 9(10), 70-79.