

# Faculty development at the Russian engineering universities and its legal regulation at the state level

## El aumento de la calificación del personal docente de las universidades rusas de ingeniería y su regulación en el nivel estatal

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#### ABSTRACT:

This article presents the system of faculty development at Russian engineering universities, which has formed under the influence of educational, legal, administrative, and social factors. The main objective is to determine the extent to which the development programmes correspond to the interests of university professors, and the challenges of modern higher education. The classification of development programmes is proposed. We suggest some measures to be taken to create an integrated system of faculty development.

**Keywords:** faculty development, development programmes, legal regulation.

#### RESUMEN:

El artículo presenta el sistema de aumento de calificación de profesores de universidades técnicas rusas formado bajo la influencia de factores educativos, jurídicos, administrativos y sociales. El objetivo principal es determinar la conformidad de tales programas a los intereses de profesores y a las tareas de la enseñanza superior moderna. Por primera vez se ofrece la clasificación de programas del aumento de calificación. Se proponen varias medidas para crear un sistema íntegro del aumento de la calificación de profesores universitarios.

**Palabras clave:** el aumento de la calificación de los profesores universitarios, el programa de pasantía, la regulación jurídica.

## 1. Introduction

Previous studies indicate that faculty development is considered one of the most essential and highly demanded activities of the university administration if it is interested in high ranking and popularity of its institution (Altany, 2012; Beach et al., 2016; McLean et al., 2008). However, several publications have appeared in recent years documenting that the organisation of faculty development has extended beyond the scope of administration's

responsibilities and become a matter of state importance (Alford & Griffin, 2017; Gokmenoglu et al., 2016; Hénard & Roseveare, 2012).

In the most general view, faculty development means various activities of the academic staff to encourage individual and institutional growth (Ahmady et al., 2016). In accordance with the main professional activities of the university professoriate, it is defined as 'Any planned activity to improve an individual's knowledge and skills in areas considered essential to the performance of a faculty member in an academic institution (e.g. teaching skills, administrative skills, research skills, clinical skills)' (McLean et al., 2008).

The problem of organising faculty development at the universities is a complicated and multi-folded. In most cases, it is regarded as a mighty means of university faculty's motivation to improve quality of teaching by introducing new information, technologies and equipment (Diaz et al., 2009; Rikhter, 2012); to find new areas of research, for example by using social network analysis (Royal et al., 2014) or through external research funding (Chval & Nossaman, 2014). Faculty development programmes can be aimed at experienced professors to prepare them to promotion procedures (Nulty et al., 2016) or newly-hired faculty members who need special mentoring programs in order to accommodate in a new environment (Alford et al., 2017; Mullen, 2012). The university curriculum contains a number of educational areas, which demand a constant updating of the faculty's knowledge and skills due to the very essence of the subjects and technologies that are regularly being modernised. First and foremost, it concerns the faculty involved in IT-education (Diaz et al., 2009), medical (Lancaster et al., 2014), and engineering programmes (Baillie, 2007), etc.

Recently, several authors (Eddy & Rao, 2009; Miller, 2003) have proposed a new type of development programmes that are directed at promoting business administration and personnel management skills among the faculty and helping the professors with specific communicative patterns and techniques in the process of university governance.

Though, it have always been considered one of the most important conditions for attracting new students and increasing of the university's ranking, nowadays, as reported by Elizabeth C. Nulty, Sara Quay, Michael F. Dorsey (2016) and Fabrice Hénard, Deborah Roseveare (2012) faculty development has acquired new traits that reflect great changes in higher education: it is aimed at providing the faculty with better understanding of new educational concepts and paradigms, it grounds the ideas of continuous, career-long personal growth and education based upon modern theory, research, and professional interdisciplinary collaboration with colleagues. This new mission of academic faculty development gave Dr. Alan Altany the idea of its metaphorical comparison with the fourth leg of the three-legged stool of academic life. Teaching, research, and service have been always considered the corner stone of any successful university, but only by means of the fourth leg, i.e. faculty development, it can acquire real strength and stability (Altany, 2006).

In many countries, academic faculty development is being subjected nowadays to the process of changing due to a number of radical shifts in methodology of education, introduction of modern technologies and requirements from the interested industries. Especially, these changes are actual for those countries that have launched reforming of the social and cultural programmes, system of national education and other vitally important spheres for their population. To prove it, introduction of new development programmes for school-teaching staff and university faculty has become mandatory due to a number of national reforms in Turkey (Gokmenoglu et al., 2016), Iran (Ahmady et al., 2016), China (Mohrman et al., 2011) and some other countries.

The necessity of introducing a number of topical courses into the faculty development curriculum and modernising of the whole system of further education has become clear for the administrations of the Russian universities when for the first time in the history of the country the Russian Federal Law 'On Education in the Russian Federation' (2012) stated that all university professors have both the right and obligation to get professional development as often as every three years because regular and continuous development is regarded not only as an eligibility requirement but as an efficient measure of overcoming of educational crisis.

The shortcomings in university professional development forced the Russian Government to

adopt a number of legislative documents in the educational sphere to stipulate professors' regular training and to provide the desired uniformity among the university programmes: the Federal Law 'On Education in the Russian Federation' (2012); 'On Confirmation the Order of Organisation and Realisation of Educational Activity on Additional Professional Programmes' (2013) approved by the Order of the Ministry of Education and Science of the Russian Federation. Some articles in the above-mentioned documents clarify the content of the required faculty development programmes and state new spheres of professoriate's education. So, the article 41 of the Federal Law 'On Education in the Russian Federation' (2012) contains the clause of mandatory faculty's training in the field of providing first aid to any person in need. Moreover, as it is mentioned in the article 79, one of the state's functions that is realised by the state authorities is to organise teachers' development and training in the field of special teaching methods and approaches to education of disabled students.

Besides the above-mentioned federal documents, there are a number of subordinate regulatory acts, which influence the choice of programmes for faculty development. So, the Federal State Educational Standards of Higher Education (2015) for different Bachelor and Master Programmes, approved by the Ministry of Education and Science of the Russian Federation, contain the requirement of a mandatory creation and functioning of electronic informational and educational university environment corresponding to the competences of the employees who use it. Consequently, all the teaching staff is to get informational and communication skills required for introducing data into this environment, organising on-line and off-line communication and consultation of the students, checking of their tests, and conducting electronic and distant education.

Though significant efforts were made by the governmental authorities, there is still a tangible gap between the desire to create a multi-leveled and diverse system of the university professors' development and practical results in this sphere. The situation is aggravated by the fact that when a federal system of special institutes of school-teachers' development has been successfully functioning in Russia for several decades, there is no such common system for university faculty development. University administrations have to invent their own curricula, search for material and human resources for creating the required programmes for their staff in order to meet the requirements of new educational legislation.

Thus, our article will be focused on new features in the system of faculty development in Russian engineering universities lined by the requirements of federal legislation and those factors which hinder the process of its introduction. The aim of our research is to conduct the analysis of a complex of faculty development programmes launched in an engineering university due to the federal legislation and their correspondence to the needs of the university staff.

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## 2. Methodology

Professional development of the engineering universities' teaching staff has always been considered in Russia as a compulsory and highly demanded element of the system of higher education as it provides qualitative training and education of young engineers for different industries. However, in spite of some substantial achievements in promoting the system of professional development at the engineering universities, there are still some shortcomings in this sphere:

- some of the engineering universities or their departments have not yet established beneficial relations with the corresponding industrial enterprises, which can significantly modernise the system of professional development;
- the content of vocational training for the university professors is often presented by means of conventional, outdated themes and methods that do not reflect innovative changes in the modern industries;
- faculty development is not conducted systematically, moreover, it does not cover all the problems which are topical for modern industries;

– a great number of lessons for faculty are usually aimed at providing them with some new information, while workshops, case-study discussions and other practical forms of study are still scarce.

Lately, the problems of diverse and all-rounded faculty development have become so clear for the government that a number of legislative documents in the educational sphere were worked out to stipulate regular professional development and to provide the desired uniformity among the courses. State regulation of the university professoriate' development and further education in Russia is conducted on the federal level by the Federal Law 'On Education in the Russian Federation' (2012). In the article 47 of this law, all the university teaching staff have the right on further professional education in the scope of their teaching activities as often as every three years. The same statement can be found in eligibility requirements to the professoriate positions stated in the Professional standard 'The Teacher of Vocational Training, Vocational Education and Additional Professional Education' (2015), which outlines the most essential spheres of the academic rights and duties in Russia.

Taking into account these innovations on the level of educational legislation and practical realisation of development programmes, we have decided to analyse the state of the existing system of faculty development in one of the leading Russian engineering universities – Rostov State Transport University (RSTU), which is located in the South of Russia in the city of Rostov-on-Don and belongs to a group of railway industry universities, authorized both by the Ministry of Education and Science of the Russian Federation and the Ministry of Transport of the Russian Federation.

The research that was conducted during three years (2015-2017) was focused on the work of a special university department 'The Centre of Professional (Vocational) Development', the process of choosing of new programmes that can meet the requirements both of legislative documents and university staff's needs, working-out of the content of these programmes and organisational activities for attracting the faculty. Special attention was paid to defining the degree of satisfaction displayed by the professors after completing development programmes.

Using the method of statistical manipulation of data and empirical methods (questionnaire, observation, conversation), we measured the university professoriate's activity in acquiring new skills and competences and their degree of satisfaction after attending of various development and further education programmes. We used methods of comparative pedagogics in order to decide how programmes conducted in the Russian university correspond to international tendencies of faculty development. On the whole, the content, educational structure and practical implementation of 15 specialized programmes were analysed. More than 350 teachers of different academic positions, ages and teaching experience were interrogated during empirical research.

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### **3. Results**

Starting the analysis of faculty development programmes suggested at Rostov State Transport University, we decided to compare their content with similar courses used in other countries. We have analyzed more than 80 faculty development programmes, which are advertised in the internet by the universities and special Faculty Development Centres and offices in the USA (Harvard University; Western Michigan University; University of St. Thomas, Minnesota, etc.), India (IIMA, ICT Academy, etc.), China, Singapore, Estonia (Baltic Defence College, etc.) and other countries, that suggest developing of different innovative skills and updating of the professors' knowledge. In the result, we found out that 46 per cent of these programs deal with advanced IT-education, programming, and learning of modern software that can help the university professors to educate the students both in the class-room and distantly. About 25 per cent of programmes are directed at providing the faculty with modern technologies of research writing and editing, for example statistical techniques for data analysis, etc. Almost 12 per cent of the programmes are aimed at developing of communicative patterns in university government, personnel administration, leadership and managerial skills. No less attention is given in such countries as India and China to the programs of renewable energy sources. And, last 5 per cent of the programs concern the

problems of sustainability and the environment, as it was described by P.F. Barlett and A. Rappaport (2009).

So, this comparative analysis made it possible to come to the conclusion that faculty development programmes suggested by foreign universities are mainly directed at providing the professors with new information and technologies in the topical professional activities: teaching, research and social communication. The situation with faculty development in Russian had been to more or less extend similar before 2012 when the Federal Law 'On Education in the Russian Federation' (2012) was adopted.

To describe the system of faculty development in one of the engineering universities, one should start with its organisational structure. Among other departments in the structure of RSTU, there is 'The Centre of Professional (Vocational) Development' (CPVD). The CPVD acts according to the federal legislation and reports back to the Vice-Rector who is in charge of professional development. The CPVD has the following functions:

- to ensure the fulfilment of legislative documents in the sphere of professional training and additional education;
- to provide continuous and various professional development for university staff;
- to provide vocational training, further education and development for railway industry engineers;
- to approve curriculum for different development programmes;
- to hire teachers for realization of development programmes;
- to attract the university staff members and railway industry engineers to development programmes by promoting their innovative character;
- to conduct testing and other forms of control to ensure a high level of competences after attending development programmes;
- to issue certificates that certify the fact of acquiring new skills and competences, etc.

**Table 1**  
Faculty's activity in development programmes

No	Faculty Development Programme	Academic hours	Faculty's participation (people)		
			2015	2016	2017
1	Faculty's training in methods of first aid	16			763
2	Special teaching approaches and methods in education of disabled students	72			761
3	Electronic informational and educational university environment for teaching staff and students, including students with disabilities	20		822	
4	Electronic informational and educational university environment and electronic university library for teaching staff and students, including students with disabilities	72			297
5	In-depth training according to educational field	72			593
6	Regulations and methodical foundations of teaching and research activity	40	304		

7	Development programme in scientific research	72		79	
8	Scientific and project research of the university staff member	72			33
9	Labour protection and knowledge control in labour protection	40	92		
10	Designing in construction	72	9		
11	Informational and communication technologies in professional activity of the university staff member	72	53		
12	Psychological and teaching fundamentals of educational technologies (including teaching of students with disabilities)	106	20		
13	Engineering research	72	12		
14	Introduction of modern technologies used in railway industry into educational process	72		23	
15	Efficient personnel management (according to Professional Standard)	256		18	

Table 1 illustrates great changes in the system of faculty development, which took place after adoption of numerous additions and amendments into the Federal Law 'On Education in the Russian Federation' (2012) in March, 2015. Before these changes, the most popular programme attended by 304 staff members was 'Regulations and methodical foundations of teaching and research activity'. Such attention can be explained by introduction of some new legislative acts into the university life at that time. Some of them concerned the publication activity of the professoriate in the international scientific journals, registered in SCOPUS and Web of Science. The results of the staff's publication activity in these systems were proclaimed as one of the leading indicators of the university ranking, that is why the faculty was interested in getting some additional knowledge in technical aspects of presenting their research.

As it was mentioned above, before the Law on Education exerted its influence on the choice of programmes in 2015, 166 faculty members of the RSTU were trained within conventional programmes aimed at development of teaching knowledge and skills in the specific professional area corresponding to core subjects of the university education. The following programmes: 'Labour protection and knowledge control in labour protection'; 'Designing in construction'; 'Informational and communication technologies'; 'Engineering research' occupied a second position in the curriculum of the 'The Centre of Professional (Vocational) Development'. Much less attention was paid to development of psychological and teaching competences in educational technologies; however 20 teachers were certified at this programme. Unfortunately, it disappeared in the curriculum of the forthcoming years.

The programmes, which were run in 2016 and 2017, fully correspond to the requirements of the Federal Law (2012). And it is clear that the university administration did its best to attract almost all the teaching staff (92-96 per cent) to development programmes, otherwise it might have threatened even the university's license. At the same time, these programmes became very specialized and far-away from the every-day needs of the university teachers.

If to classify the development programmes realised in 2015-2017 according to their content,

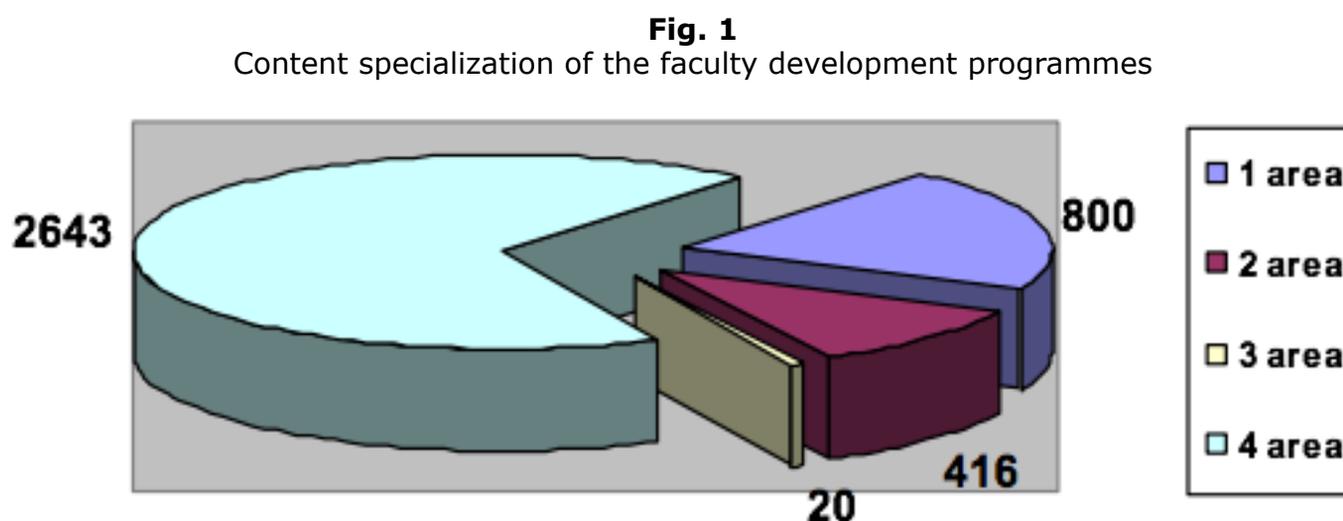
aims of education and connection with professors' activity, four basic areas can be singled out. The first one is 'In-depth training in the specific professional area corresponding to core subjects'. The development programmes of this type have always been the most essential for Russian engineering universities since constant modernisation of industries, introduction of new technologies, equipment and methods of its using require regular training of the teaching staff in order they could introduce new information and skills in their courses. During three years, the programmes of this type were attended by 800 staff members. One of these programmes 'Introduction of modern technologies used in railway industry into educational process' was created by joined efforts of the CPVD and the authorities of the Russian Railways in order to widen relations between the university professoriate and industry and introduce the latest techniques, methods and technologies used in the railway structural departments into the curriculum of the transport university.

The second group of development programmes is aimed at providing the faculty with the skills of information search and scientific data presentation in both Russian and foreign journals, academic writing, technologies of preparing an article for publication in foreign journals, etc. These programmes, which were attended by 416 teachers, also give valuable advice in the field of participating in the grant conquests. So, this type of professional development is associated with new tendencies for Russian higher education connected with increase of professoriate's publication activity in the foreign scientific journals, necessity of searching additional financing for research, and striving to get a higher position in the international university ranking systems.

One more area of programmes is connected with the necessity of development the faculty's knowledge and teaching skills in the sphere of pedagogics and psychology. This area is of great importance for engineering faculty as almost all the teachers do not have any education in this field. So, 20 members of the faculty attended this programme in 2015.

And at last, the fourth content area is conditioned by juridical innovations in the sphere of higher education. Though, these programmes contain valuable information, their introduction into the curriculum is stipulated more by the decision of federal authorities than the practical needs of the university. Almost all the staff members (2.643 people) were initiated to finish these programmes in order to abide by the Federal Law.

The distribution of faculty development programmes according to their content areas is shown in Fig 1.



Changes in the system of professional development were met ambiguously by the faculty of RSTU. In order to find out the degree of satisfaction among the professoriate after attending the programmes of all four content areas, we conducted a questioner and several conversations with 350 teachers of different academic positions, ages and teaching experience. The results are presented in table 2. Taking into account that members of the faculty attended different development programmes and sometimes chose more than four or five ones during these three years, we suggested them answering the same questions about all the courses. For every programme, all the members who took part in the questionnaire and completed the exact course were taken as 100 per cent.

University faculty expressed the highest degree of satisfaction when they analysed the

programmes of the first area as they considered constant professional training essential and mandatory for quality teaching: 56 per cent of respondents were fully satisfied with the correspondence of the in-depth training programmes to their professional tasks and teaching areas; 72 per cent also considered these programmes corresponding to the legislative requirements.

Table 2  
Professoriate's opinion of faculty development programmes (in %)

Information on the programme	Fully satisfied				Satisfied				Not satisfied			
	1	2	3	4	1	2	3	4	1	2	3	4
Content areas												
Correspondence to the teaching area	56	20	34	12	34	52	40	16	14	28	26	72
Modern information and knowledge	36	12	24	12	42	48	56	16	22	40	20	72
New skills and technologies	36	24	42	22	48	52	22	26	16	24	36	52
Widening of general culture	18	66	82	32	22	32	16	22	70	2	2	46
In-depth training	52	14	10	6	34	28	34	4	14	68	56	90
Correspondence to the modern requirements of higher education	48	82	24	14	32	14	34	36	20	4	46	50
Correspondence to the legislation requirements	72	34	12	86	16	32	8	6	12	34	80	8
Presentation of the programme	32	12	22	8	44	26	56	14	24	62	22	78

Speaking about the programmes in research development, 82 per cent of the respondents marked their correspondence to the modern requirements of higher education, but 62 per cent did not like the way of their presentation. The main aspect of satisfaction after attending programmes in pedagogics and psychology was widening of general culture (82 per cent plus 16 per cent). However, 20 per cent of listeners do not consider this programme corresponding to legislation requirements and only 34 per cent fully agree that it can be used in their teaching area.

The teachers displayed the least degree of satisfaction after attending the programmes stipulated by the Federal Law, though they stated that they understood the purpose of introduction of these courses (86 per cent plus 6 per cent). General perception of information was worsen also by poor presentation (78 per cent), lack of attention to new skills and technologies (52 per cent) and in-depth training (90 per cent), which were supposed to be developed by these programmes.

## 4. Conclusions

This paper presents the system of faculty development in Russian engineering universities, which has formed under the influence of a complex of factors: educational, legal, administrative, and social. The main objective of the paper was to conduct the analysis of a complex of faculty development programmes launched in an engineering university due to the federal legislation and their correspondence to the needs of the university staff. The main concern of the paper was to attract attention to the problem of creation of systematic professional development at the engineering universities that we consider the key factor in overcoming the crisis and stagnation in the Russian engineering education.

Our research clarified that the focus and a general idea of faculty development and additional education in Russian universities have radically changed during the last five years. New eligibility requirements to professoriate stated in federal laws define the necessity of introducing of some specific programmes and forming of new skills and competences, which the academic circles have never dreamt about.

The results have shown that faculty development and further education are realised at Russian engineering university by means of specialised programmes: development programmes and professional retraining programmes. The paper presents classification of the development programmes in four basic areas according to their content, aims and connection with faculty's professional activity. To our knowledge, this is the first study to analyse the development programmes not only on the basis of their professional relevance, but according to their correspondence to legislative requirements.

The conducted empirical research displayed ambiguous attitude of the professoriate to development programmes of these four areas and various degrees of satisfaction depending on such factors as availability of modern information and knowledge, possibility to develop new skills and technologies, correspondence to the legislation requirements, etc. The statistic data obtained in our research prove the fact that these programmes have various degrees of efficiency due to number of factors. Taking into consideration the vital necessity to improve faculty development programmes, some urgent measures should be taken both on the federal and university administrative level in order to increase quality of teaching.

This study shows that in spite of the constant attention to this sphere of faculty development from the government, local authorities and university administration, there are still a lot of topical issues that require immediate measures. We agree with the Russian researchers who write that the faculty of engineering universities lack specialized education in pedagogics and psychology (Isaeva, 2013; Minin et al., 2014). As a rule, the teaching staff of engineering universities is mainly formed of the former graduates and post-graduates who start conducting the lessons keeping in mind those models of teaching, which they experienced being the students. Thus, their understanding of the teacher's role in the professional development of their students can be wrong from the very beginning or it can be distorted by some subjective attitudes. In one of our previous articles (Isaeva, 2013), we analysed the results of the questionnaire conducted among the university teachers. It revealed that many of the teachers continued their work as they had used to 15-20 years before, without taking into consideration the changes introduced by the latest Federal State Educational Standards (2015); some of them did not understand the essence of the competence-based education. The majority of the RSTU staff does not have any specialized teaching education, do not know the meaning of the new pedagogical concepts. These data are mostly the same for engineering programmes as well as for the humanities, besides ignorance in pedagogical aspects of education is displayed by the teachers belonging to different age groups and having a varied working experience.

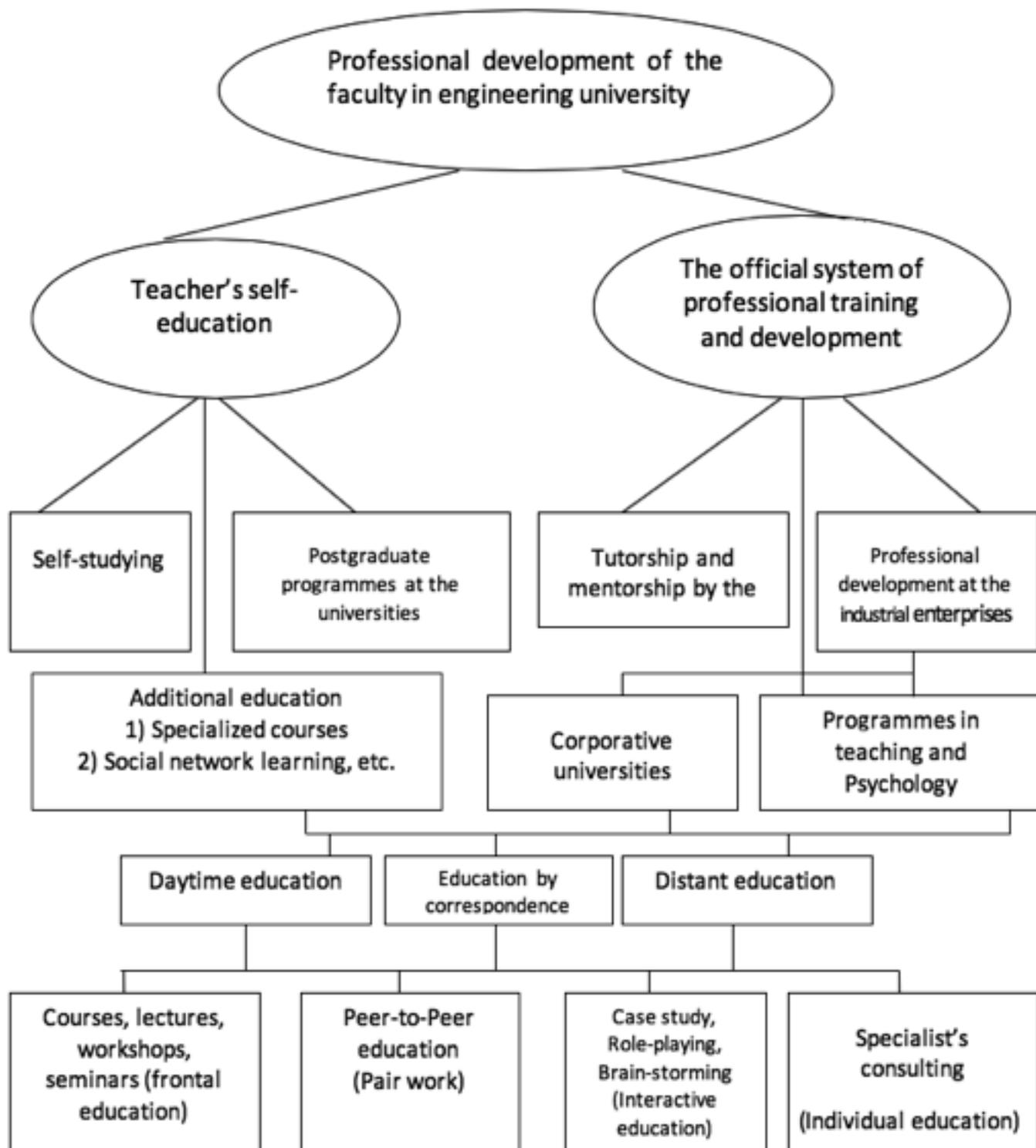
To support our view, it is suffice to recall that in the last few years a number of articles were published on the problems of improving the system of faculty development in Russia (Minin et al., 2014; Rikhter, 2012, etc.). The main idea of these publications is to provide a systematic, innovative and highly efficient development of the university professors in the most topical areas: teaching (including competence-based education, interactive teaching methods, distant education, use of electronic university environment and social networks,

etc.), research (enhancing of publication activity, participation in grant conquests, international publications and conferences, etc.), social and psychological assistance to the students (problems of adaptation to a new environment, leadership and social activity, etc.). These ideas can be achieved only by mutual efforts of the university administration, faculty, and industrial enterprises acting as potential employers of the graduate students. Moreover, the system of faculty development needs a federal support (legislation, financing, programmes and curriculum, etc.). Taking into account faculty's low degree of satisfaction with programmes stipulated by federal legislation displayed by our research, the concept of faculty development should be examined more than once and changed to meet the most vital desires of the university staff.

To illustrate our point of view on the possibilities of making a more efficient faculty development system, in Fig. 2 we present our model of potential types and forms of faculty development for engineering universities in Russia. It is hard to say that all these structural elements have the same efficiency or they are similarly developed. For example, Corporate University as a form of professional development does not exist in all the industries, but taking into account the positive experience of the Russian railways, for example, it can be introduced more widely.

**Fig. 2**

Forms and types of faculty development at the engineering university



On the basis of the findings presented in this article the following requirements to the system of faculty development at the engineering universities should be stated:

– necessity to analyse and modernise the development programmes annually due to

constant changes in professors' professional activity and duties. For example, striving to reach correspondence among educational documents used in Europe and Russia, the Russian governmental authorities introduced new requirements for competence-based educational process in 2012-2012, however the professoriate was not ready to these radical changes and did not get any proper support in development.

- requirement to provide the professors with information about international standards and international experience of students' evaluation;

- opportunity for the faculty to get further professional development at industrial enterprises; moreover, the academic engineers who are involved to the teaching process (Baillie, 2007) can also be asked to conduct a course for the teaching staff;

- using of various methods and forms of education as well as combination of the listeners having different age, working experience, teaching experience, background and fields of scientific interest in one group that we believe to be highly efficient in the development process.

We are positively sure that the process of faculty development is to be conducted mainly in a classroom form and only partially in a distant one as the later hinders interpersonal communication and mutual enrichment with knowledge and teaching experience.

Meanwhile, more research of the influence of faculty development programmes on quality of education is still necessary before answering the question – who can be responsible of their choice: the government authorities or the faculty itself.

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