В. А. Беликов, П. Ю. Романов, Д. И. Павленко, А. М. Филиппов

Профессиональная мобильность обучающихся организаций среднего профессионального образования как результат дуальной системы образования

Необходимость дуального образования как формы и способа подготовки обучающихся к профессиональной деятельности определяется комплексом социально-экономических факторов. Дуальная система образования в большей степени востребована и наиболее эффективна в аспекте развития профессиональной мобильности обучающихся.

В дуальной системе образования мобильность обучающихся является результатом взаимосвязанной деятельности профессиональной образовательной организации и базового предприятия. Основными признаками профессиональной мобильности обучающихся являются их способности к смене места и рода профессиональной деятельности в зависимости от условий ее выполнения и особенностей ситуаций, разрешаемых в процессе профессиональной деятельности.

Решение задачи развития профессиональной мобильности обучающихся организаций среднего профессионального образования осуществляется в рамках концепции, согласно которой профессиональное образование реализуется путем организации во взаимосвязи учебно-познавательной, учебно-профессиональной и профессиональной деятельности обучающихся.

Эффективность развития профессиональной мобильности обучающихся обеспечивается выполнением комплекса организационно-педагогических условий, в основании которых лежат выделенные объективные закономерности системы дуального образования.

В эксперименте участвовали 127 студентов и 24 преподавателя Учебно-производственного центра «Резерв» (Магнитогорск, Россия) и Костанайского социально-технического колледжа (Костанай, Казахстан).

Методом педагогического эксперимента установлено, что развитие профессиональной мобильности обучающихся носит уровневый характер. Главным критерием оценки уровня является готовность обучающихся к выполнению профессиональной деятельности в различных условиях и ситуациях. Методом сравнительного анализа результатов эксперимента доказано, что при традиционном профессиональном обучении большая часть обучающихся находятся на низком и среднем уровнях развития профессиональной мобильности (от 39,5 % до 58,3 %), при дуальном образовании – на среднем и высоком уровнях развития (от 27,9 % до 55,8%).

Ключевые слова: среднее профессиональное образование обучающихся, профессиональная мобильность, дуальная система среднего профессионального образования, закономерности развития профессиональной мобильности обучающихся, образовательная ситуация, педагогическая позиция

Ссылка для цитирования:

Беликов В. А., Романов П. Ю., Павленко Д. И., Филиппов А. М. Профессиональная мобильность обучающихся организаций среднего профессионального образования как результат дуальной системы образования // Перспективы науки и образования. 2020. № 1 (43). С. 72-85. doi: 10.32744/pse.2020.1.5

V. A. BELIKOV, P. YU. ROMANOV, D. I. PAVLENKO, A. M. FILIPPOV

Students' professional mobility in organizations of vocational secondary education as a result of dual education system

The need for dual education as a form and method of preparing students for professional activities is determined by a set of socio-economic factors. It is proved that the dual education system is more in demand and most effective in terms of the development of students' professional mobility.

In the dual education system, student mobility is the result of the interconnected activities of a professional educational organization and a base enterprise. The main signs of students' professional mobility are their ability to change the place and type of professional activity, depending on the conditions of its implementation and the characteristics of situations resolved in the process of professional activity.

The solution to the development problem of students' professional mobility at secondary vocational education organizations is carried out within the framework of the concept according to which vocational education is implemented by organizing in the interconnection of educational, cognitive, educational, professional and professional activities of students.

The development effectiveness of students' professional mobility is ensured by the implementation of a set of organizational and pedagogical conditions, which are based on the selected objective laws of the dual education system.

By the method of pedagogical experiment it was established that the development of students' professional mobility is of a level nature. The main criterion for assessing the level is the students' willingness to carry out professional activities in various conditions and situations.

By the method of comparative analysis of the experimental results, it was proved that with traditional vocational training, the majority of students are at low and medium levels of professional mobility development (from 39.5% to 58.3%), with dual education - at medium and high levels of development (from 27, 9% to 55.8%).

Key words: students' vocational secondary education, professional mobility, dual system of vocational secondary education, law of development of students' professional mobility, organizational and pedagogical conditions for the development of students' professional mobility in the dual system, educational situation, pedagogical position

For Reference:

Belikov, V. A., Romanov, P. Yu., Pavlenko, D. I., & Filippov, A. M. (2020). Students' professional mobility in organizations of vocational secondary education as a result of dual education system. *Perspektivy nauki i obrazovaniya – Perspectives of Science and Education*, 43 (1), 72-85. doi: 10.32744/pse.2020.1.5

Introduction

In modern society, the need for the mobility of the individual is growing, as a formation indicator of its general and professional competencies, personal qualities, as a result of mastering the content of previous professional training, the level and quality of education of educational organization graduates, as characteristics of the general development level of society, economy, culture, etc.

In assessing the preparedness level of students and graduates in educational organizations, sociologists are unanimous in their opinion – it is insufficient and contradictory.

The results of a sociological study of VEO SVE graduates' level and the expectations of employers show that graduates are confident in the gained theoretical knowledge, on the whole adequately assess their professional training as insufficient, and are concerned about upcoming employment. This concern is caused by the fact that they have no idea about the reality of their professional growth and professional career. Graduates in most cases are not ready for self-realization in the profession, for professional self-sacrifice. But at the same time they have quite high material claims, excessive requirements for the place and working conditions. On the other hand, employers value graduates of a person's young age, risk appetite, but they rate their willingness to perform professional functions extremely low, the formed (manifested) professional qualities are assessed by employers as secondary and not relevant [3; 25].

However, the high relevance level of dual education is methodologically determined by the fact that vocational education is subject to the unity laws of theory and practice. It is from this regularity that the principles of training follow – the relationship of learning with productive work, practice, polytechnicism in learning, the practical significance of learning outcomes, accessibility, strength, etc.

The purpose of our article is to determine the way of developing professional mobility of students in vocational educational organizations of secondary vocational education (VEO SVE).

Professional mobility (PM) is considered, firstly, as the ability of a student or graduate with objective reasons to change the place, form and content of his professional activity, his profession; secondly, as his ability to make independent and adequate decisions in the light of new requirements in terms of adapting to the conditions of professional activity, for example, to improve his qualifications; thirdly, as the ability of a specialist to master a new educational environment, social and professional environment quickly [12].

Taking into consideration the presented aspects of the concept of professional mobility, in our study we can talk about two of its types. The first type is horizontal mobility, as a profession change to expand the capabilities of the individual in accordance with its potential, while ensuring the constancy of its belonging to a certain professional group, social layer.

The second type of professional mobility, which we consider in our study, is vertical (upward and downward) mobility, as a change in job responsibilities (functions) within the same profession, for example, as career growth, leading to changes in social status.

Methodology

In our opinion, we need such methods and forms of professional training that would provide conditions for the professional mobility development, could form adequate professional aspirations for students and shape the desire for professional self-realization and

self-improvement in the profession, the formation of behavioral and personal competencies in their relationship.

We searched and tested the appropriate methods and forms of vocational training for students of vocational education institutions that ensure the development of their professional mobility on the basis of the Training and Production Center “Reserve” (Magnitogorsk, Russia) [11] and the Kostanay Social Technical College (KSTC) (Kostanay, Kazakhstan) [5]. In total, 127 students and 24 teachers of these organizations took part in the study.

In achieving this goal, we proceed from the fact that not a single educational institution of secondary vocational education is capable of independently forming a professionally mobile personality of a student. Therefore, the characterization of the process of professional mobility development may involve a description and implementation of two stages:

The 1st stage – the formation of students' readiness for professional activities during the preparation period in an educational institution;

The 2nd stage – the formation of readiness for a change in professional activities at the enterprise, in the organization.

Thus, we come to the need for dual education of students, in which mobility is the result of the activities of VEO SVE and the enterprise (organization), in which the student is oriented towards professional activities.

Therefore, as for the formation and development of professional mobility, we propose the use of methods based on the dual approach – the formation of a professionally mobile personality along with theoretical knowledge, general abilities and skills, and the ability to learn, to form social skills [15; 19].

In the organizational aspect, we consider dual training as a complex of organization and implementation forms of students' professional education, in which theoretical training is carried out in an educational organization, and practical training is provided in a production organization taking into account the requirements of the employer. [8; 9]. This division allows considering a large extent the socio-economic characteristics of the region, its needs for personnel [10; 15].

In the framework of dual training bilateral, tripartite and quadripartite cooperation agreements are concluded between vocational education organizations, educational departments of regions, enterprises and organizations of entrepreneurs

The introduction of a dual education system for students in vocational schools and enterprises leads to the fact that vocational training in goals, content and educational technologies as a whole is more oriented towards existing industries and social activities. In addition, the motivation of enterprises in the process of vocational training of students of educational organizations and their financing is significantly increased. There is also an increase in the efficiency of forecasting the needs of enterprises in the region for personnel [14; 18].

Our experience has shown that the development of students' professional mobility is more successful if both theoretical and practical training is carried out with the help of (with the participation of) the company's specialists.

We consider professional mobility within the framework of the concept according to which vocational education ensures the personality development by organizing his or her activities – educational, cognitive, educational, professional and professional. Therefore, we have every reason to talk about personality-developing vocational education, the result of which is a professionally-mobile personality.

The search for an answer to the question about its development is connected with the determination of the organizational and functional aspects of the personality-developing vocational education, for which we consider it important to highlight the dual education principles.

We proceed from the fact that the successful development of students' professional mobility depends on how fully the following principles of dual education are implemented:

1) the creation in the educational organizations and basic enterprises of an atmosphere of interaction, support and cooperation of students, teachers and specialists, as well as the creation of conditions for the fulfillment of the pedagogical activities of the teacher, professional activities of the specialist and the educational activities of students;

2) ensuring self-education, self-development, advanced training of students, teachers of the educational organization of secondary vocational education and specialists of the base enterprise;

3) clarification, awareness and acceptance by all subjects of dual education of a system of professionally significant values, the formation of students' value orientations and following them in their activities;

4) the assimilation of general and professional knowledge and skills, the formation of general and professional competencies of students should be carried out taking into account the requirements of the Federal State Educational Standard of Higher Professional Education, allow free choice of methods, means and forms of the implementation of educational and training activities that promote the development of professional mobility;

5) regular and operational diagnostics at the entrance to the dual system of vocational education, in the process of its implementation and at the exit from the system, as well as self-diagnosis of the level of professional mobility [19].

The analysis of the scientific literature [13; 27, etc.], the analysis of our research results on the development of students' professional mobility in the dual education system, the implementation of the presented principles have led to the conclusion that professional values and value orientations of students are a system-forming component of the dual education system and the development of students' professional mobility of VEO SVE, since on their basis perception, awareness, understanding and acceptance of the goal of professional training in the organization of free software and the enterprise that they can help meet the needs and interests, realize the abilities of each student.

In our system of secondary vocational education, in our opinion, the goal of forming a personality with desired properties is erroneously set, which is practically unattainable. The maximum that can be done is to create the conditions under which the needs and abilities of the person that are significant for mastering the profession will be fully taken into account, the prerequisites will be created for the full-fledged formation and development of young people as subjects of the educational process. In the dual system of professional education, this aspect is fully realized. The result of this approach should be a professionally mobile person.

In the process of developing students' professional mobility of VEO SVE, it is important to consider what and to what extent the structural components of the students' personality are developing (qualities, competencies, practical experience, orientation), as well as assess the level of their significance for professional activity.

Therefore, in the course of our study, taking into account the signs of the concept of professional mobility, we identified and examined the following key components of the personality of students that determine the development of their professional mobility and

depend on the level of its development. The key components are:

- a high degree of satisfaction of educational, cognitive, professional interests in educational and professional activities;
- achieving a high level of self-esteem and mutual respect in the team of peers, students and teachers;
- professional growth and professional career based on continuous professional development;
- improving the level and quality of material well-being of students, graduates and their families.

In the process of formation and development of a professionally mobile personality, an important factor, therefore, is the factor of self-determination by each student as a person for whom the development of professional mobility is valuable. Since it is self-determination, being a natural need of a person that allows students to identify, realize, understand and evaluate their place and role in professional activity, create conditions for their own development [16].

Self-determination of personality in education can be considered as:

- 1) process – continuous improvement of the personality in the system of relations in dual education;
- 2) system – a set of interpersonal professionally significant relations in dual education;
- 3) the result – a set of qualities and competencies of the person, providing her with the adequate implementation of educational and professional activities.

Thus, we have the right and opportunity to highlight and consider **the following regularity** in the development of students' professional mobility in the dual system of vocational education: **educational and educational-professional activity – self-determination – effective implementation of the professional activity process.**

In other words, an activity provides self-determination of a person, a person with a high level of self-determination is capable of highly effective activity in any conditions.

The traditional system of vocational education does not ensure the formation of professional mobility of students and, therefore, does not provide a decent level of self-determination for students and graduates of VEO SVE.

We have proved that only the dual system of vocational education can ensure self-determination of a person, as it guarantees the mastery of all types of activities – educational-cognitive, educational-professional and professional.

In the dual system of vocational education, the students' activities are implemented in stages, at each stage, the perception of the subject of professional activity, its awareness and understanding of the necessary actions with this subject, the compilation and implementation of the algorithm of activity, generalization, systematization and formulation of recommendations for the further implementation of activities are carried out. We believe that the implementation of each stage of activity, therefore, is accompanied by the formation of the student's idea that he is learning what he does and what he will receive as a result. Each named aspect has practical value.

Consequently, a practice-oriented representation is an equal structural component of all types of activities and self-determination of a person in any form is associated with a person's idea of his place, his role, his importance in society, and in the profession.

In this case, it should be borne in mind that the basis of self-determination of the personality of students is the formed system of values and value orientations of professional activity, for which they are prepared in the educational organization of STR. The essence of

these values and value orientations is the presentation of professional activity as significant, useful, necessary, and appropriate. As students of one of the experimental groups put it, the fulfillment of professional activity should be perceived as a natural norm.

With this approach of students to the profession, the relationship between the student and the subject of activity as between the subject and the object becomes valuable, the performance of the activity becomes interesting, significant for the self-development of the student's personality and, therefore, for the development of his professional mobility, the relationship "value-personality" is established [17; 23; 24].

Given the variety of manifestations of the relationship "value-personality", we can talk about the variety of objects of activity and human relations with other people [4; 6].

Thus, taking into account the signs of concepts, professional mobility, value and professional activity, considering the potential of dual education, we get the opportunity to formulate **the following regularity** of the development of students' professional mobility in the dual system of professional education: **activity – consciousness – value – social value – professional value – professional activity**.

A change in the content of any component of the presented relationship will certainly lead to a change in the professional position of the individual, and make her professional mobility relevant. For example, professional values that regulate activities and act as a means of mastering professional activities, when the socio-economic situation changes, they themselves will change and other components of this pattern will change. In this case, the specialist will be forced to adapt to the situation, changing, for example, the profession, place of work, that is, to prove himself as a mobile person.

The need to develop students' professional mobility poses the challenge of determining the relevant (sought-after) forms and methods of its development. In this case, we assumed to proceed from the potential and features of the dual education of learning organizations of open source software.

The main organizational form for the development of students' professional mobility of VEO SVE, as we have proved in the course of the experimental study, is the educational situation. The educational situation is a common area between the field of educational and cognitive activity in the process of theoretical training of students in VEO SVE and the field of educational and professional activity of students in the process of practical training at the base enterprise.

This conclusion is determined by the fact that each student in the dual system is considered as the subject of two educational processes - theoretical training in the organization of open source software and practical training at the enterprise. These processes can be represented as interconnected components:

- 1) stages of educational processes (training, education, socialization and development);
- 2) directions, specialty profiles, types of professional activity, the subject of which is the student;
- 3) the totality of the types of educational and cognitive activities of students, implemented under the guidance of teachers and mentors.

The main way to develop professional mobility of students in the dual system of professional education is, in our opinion, **a professionally-oriented subjective position, as a conscious, focused, effective, technologically secure reaction of the student to the educational situation**. The professionally-oriented subjective position of the student is the unity of his professional consciousness, representation, understanding and realized professional activity, where the activity itself turns out to be one of the ways to achieve basic goals and values [1; 21; 27].

A professionally-oriented subjective position ensures that students perform activities in a specific educational situation, for example, solving a cognitive problem in a training session or assembling a part in production.

Thus, we single out the third pattern observed by us in the development of students' professional mobility in the dual education system – **the development of students' professional mobility in VEO SVE is carried out in the course of activities within the educational situation, resolved by the implementation of their professionally oriented position as subjects of dual education.**

The presented three regularities of the development of VEO SVE students' professional mobility allowed us to formulate a basic model of professional mobility in the dual education system. It includes interconnected components:

1) educational practice-oriented situation – theoretical training in the organization of open source software and practical training at the enterprise;

2) a professionally-oriented subjective position – a personal attitude to the goals, the content of vocational training in the educational organization and enterprise, the educational training program, the content of professional activity, and professional environment;

3) the formation level of general, professional competencies, qualities of students, readiness to use professional methods and means of performing activities in real production conditions;

4) effective practice-oriented knowledge of the professional activity subject, assessment of one's own level of readiness to carry out activities and the level of professional skill;

5) professional mobility – a willingness to work in any socio-economic conditions, a willingness to change it with changing conditions.

Results

The implementation of the interconnectedness of these components is carried out in stages, in accordance with which we determined the stages of the formation and development of professional mobility of VEO SVE students in dual education:

1) the stage of goal-setting and motivation – the formation of students' value ideas about professional activity and professional mobility in activity, the formation and awareness of the professional activity and professional mobility goals;

2) the stage of organization and execution – ensuring mastery and the formation of readiness for independent execution on the basis of value orientations and target settings of professional activity in any practice-oriented educational situations;

3) the identification and accounting of a set of social, economic, educational and other conditions and prerequisites, following them in achieving the goals of vocational education and professional activity.

The concretization of these stages, taking into account the mastery realization levels of professional activity, allowed us to present the following approach to determining the development levels of VEO SVE students' professional mobility (Table 1).

As the main criterion for assessing the development of students' professional mobility in the process of professional activity, we use the levels of its development. In the role of indicators characterizing the development levels of professional mobility, we presented:

- fund of practice-oriented knowledge (general, methodological, theoretical, methodological and technological knowledge), their volume, consistency, effectiveness;

- features of the professional activity subject, innovative methods in education, analysis, assessment and theoretical generalization of personal experience of professional activity, as well as the experience of other stakeholders;
- the nature and directions of using the professional activity results;
- the degree of introspection and self-assessment of one's activity, an assessment of the level of one's own activity in professional activity;
- the formation level of general and professional competencies, ensuring readiness for the use of professional skills;
- willingness to develop and apply new methods, technologies of professional activity;
- degree of interest formation in achievements in professional activities for career growth.

Table 1

Characterization of professional mobility development levels of VEO SVE students

Stage	Development level	Leading value orientation	Prevailing Motives	Character of the activity
1	Intuitive (General Professional)	Mastering the basics of the profession	Error avoidance	Students solve simple educational and educational-professional tasks, using reproductive methods, realizing general (pre-professional) skills
	Reproductive (highly professional and educational)	Communication with classmates, colleagues, learning experience	Narrow selfish	Students solve the algorithmic, educational and training-professional tasks within the limits of instructions and rules
2	Search, reproductive and creative	Profession, professional culture, self-affirmation in the profession	Broad social, motives of achievement	Students quite successfully and correctly solve the main types of professional tasks, but at the same time make mistakes and violations of professional requirements
	Creative and reproductive (professional cognitive research)	Cognition, achieving maximum efficiency, authority among other students, colleagues, the basics of a career in the profession	Wide social	Students quite successfully and correctly solve almost any professionally oriented tasks, but at the same time difficulties arise in finding new, original options and ways to solve them
3	Innovative and creative (professionally research)	Creation innovation public recognition, professional excellence	Wide social	Students offer new, original options and methods for solving professionally oriented tasks, taking into account the characteristics of educational or work situations.

The generally accepted approach is according to which a level is formed if each indicator is mastered and successfully implemented [26]. The manifestation of these indicators is grouped by us and presented in the description of the leading value orientations, the prevailing motives of professional activity, in the description of the professional activity nature.

We have proved in the course of the study that the effectiveness of the development of VEO SVE students' professional mobility in the dual education system is determined by the degree of fulfillment of the three laws of the presented process. We ensured their implementation in the dual system of vocational education with the selection and implementation in a complex of organizational and pedagogical conditions, their practical saturation (the nature of professional knowledge, experience in production activities, production specialists' involvement in educational activities, etc.).

In relation to the topic of our article, we will understand the complex of interrelated and interdependent factors of the educational environment in the dual education system

by organizational and pedagogical conditions that ensure the effective development of students' professional mobility in vocational schools. At the same time, we proceeded from the fact that conditions act as active elements of the basic model of professional mobility in the dual education system.

The initial position in the fulfillment of the complex of conditions we accepted that the effectiveness of the development of students' professional mobility in the dual education system can be ensured only if the complex of conditions is necessary and sufficient, as individual random conditions often interfere with the development of mobility and the achievement of educational goals of institutions and enterprises.

We have identified organizational and pedagogical conditions for fulfilling the laws governing the development of students' professional mobility in the dual education system, taking into account:

- signs of the concepts of professional mobility, value and professional activity, taking into account the dual education potential;
- features of the goals and objectives of training students on the basis of their educational training activities in vocational education organizations and professional activities at the enterprise;
- analysis and evaluation of existing approaches to highlighting the complex of organizational and pedagogical conditions.

This ultimately gave us the opportunity to highlight the following set of conditions for the professional mobility development:

- 1) the development and implementation of a system of motivation and stimulation of all types of students' activities;
- 2) development of software and methodological support for the integration of educational activities of VEO SVE and the base enterprise;
- 3) the implementation of the diagnostic system and quality assessment of educational and professional activities of students.

Fulfillment of the presented organizational and pedagogical conditions in the complex involves individualization, adaptation, compensation and correction of the process of development of professional mobility of students, which can be most successfully achieved in the dual education system.

Naturally, when developing programmatic and methodological materials to ensure the integration of the educational activities of VEO SVE and the base enterprise, we took into account the requirements of the Federal State Education Standards (FSSES SVE).

When implementing the conditions for developing a system of diagnostics and assessing the quality of educational and professional activities of students, we took into account the general principles for the development of professional mobility – objectivity, personal interest, goal-setting, and matching the content of the dual education system to state, public and personal interests (ensuring an optimal balance of these interests), prospects, professional self-realization, system integrity.

An important task of our work was the task of processing information and visualizing the results of assessing the development level of students' professional mobility in the dual system of professional education. We solved this problem by the method of expert assessment based on the results of interviews, testing, questionnaires and tests.

The obtained results are clearly presented in Tables 2 and 3, Histogram 1. As a control group, we selected a group of students from the South Ural Power Engineering College (UET) (Yuzhnouralsk, Russia).

Table 2

Comparison of students' readiness results for professional activity as a development criterion of professional mobility

Group	Stage	Levels					
		low		medium		high	
		Quantity	%	Quantity	%	Quantity	%
Training and Production Center "Reserve" (43 h.)	Start	17	39,5	16	37,2	10	23,3
	Finish	7	16,3	24	55,8	12	27,9
Kostanay Social and Technical College (84 h.)	Start	41	48,8	23	27,4	20	24,7
	Finish	19	22,6	35	41,7	30	35,7
South Ural Power Engineering College (24 h.)	Start	15	62,5	6	25,0	3	12,5
	Finish	14	58,3	6	25,0	4	16,7

Table 3

The dynamics of students' readiness for professional activities as a development criterion of professional mobility

Group	G by level (%)		
	low	medium	high
Training and Production Center "Reserve" (43 h.)	-23,2	+18,6	+4,6
Kostanay Social and Technical College (84 h.)	-26,6	+14,3	+11,0
South Ural Power Engineering College (24 h.)	- 4,2	+0,0	+4,2

Histogram 1 Formation status of students' readiness to professional activity as a development criterion of professional mobility (end of experiment)

Thus, the number of students with a low level of readiness in the experimental groups has significantly decreased. The number of students with an average and a high level of professional mobility has increased significantly. At the same time, in the control group of UET no changes have been found in the distribution of the students by level.

As only a set of organizational and pedagogical conditions for dual education was implemented in the experimental groups we conclude that the transition of students to a higher level of mobility development has occurred for this reason.

Discussion

The presented results convincingly demonstrate the positive nature of the dual system influence of professional education on the development of students' professional mobility. Note that this result was achieved by us when fulfilling a set of organizational and pedagogical conditions formulated taking into account the laws of this process.

Thus, our study to some extent provided a solution to the urgent task of developing students' professional mobility, taking into account the content of the educational order, the socio-economic conditions for the functioning and development of professional educational organizations, and the characteristics and needs of enterprises and institutions. And it is important to mention that the materials presented in the article, when used in practice, make it possible to ensure the efficient nature of the system of practice-oriented dual education.

Conclusion

We have proved that the dual education system is in demand and is an element of objective production and educational reality, which theoretically means the presence of objective laws of its implementation. We supplemented the existing system of laws of dual education with the following three laws, as stable relationships:

- firstly, activity – self-determination – the implementation of relations in the process of new activity;
- secondly, activity – consciousness – value – social value – professional value – activity;
- thirdly, the development of students' professional mobility – educational situation – professionally-oriented position.

The presented development regularities of the students' professional mobility allowed us to formulate a basic model of professional mobility in the dual education system and determine the organizational and pedagogical conditions for its development, the implementation of which provided a significant increase in the level of students' preparedness for professional activity.

We have confirmed our assumption that the success of the development of students' professional mobility will be much higher in the dual education system when the above conditions are met. The results of our study allow us to hope that their practical use will turn out to be positive given the changing socio-economic and political conditions for the development of society.

REFERENCES

1. Abdurazakov M.M., Aziyev R.A., Romanov P.Yu., Sadykova A.R. Teachers IT competence structure and content in the field of cloud computing. *The European Proceedings of Social & Behavioural Sciences*, 2017. vol. XXVIII, pp. 1-8. DOI: <http://dx.doi.org/10.15405/epsbs.2017.08.1>
2. Balikaeva M.B., Chizhevskaya E.L., Grevtseva G.Ya., Kotlyarova I.O., Volkova M.A. Innovative technologies as a means of the development of future engineers' professional mobility abroad. *IOP Conference Series: Materials Science and Engineering*, 441 (1), № 012007. DOI: 10.1088/1757-899X/441/1/012007

3. Basharina O. V. Theoretical bases of the problem of personnel support of regional economy. *Innovative development of professional education*, 2018, no. 2 (18), pp. 20-28. (in Russian)
4. Belikov V.A. Didactics of educational and cognitive activity: monograph. Moscow, Pero Publ. 2017. 296 p. (in Russian)
5. Belikov V.A., Pavlenko D.I., Filippov A.M. Dual education in the modern system of professional training. *Actual problems of modern science, technology and education*. Magnitogorsk, NMSTU Publ., 2019, vol. 2, p. 64. (in Russian)
6. Belikov V.A., Valeev A.S., Grishin A.V., Makhnovsky S.A. Professional education as a system of educational and cognitive activity of future specialists: monograph. Magnitogorsk, 2009. 162 p. (in Russian)
7. Dolgova V.I., Belikov V.A., Kozhevnikov M.V. Partnership as a Factor in the Effectiveness of Practice-Oriented Education of Students. *International journal of education and practice*, 2019, vol. 7, pp. 78-87.
8. Dual education in Russia. *Accreditation in education*, 2016, no. 88. Available at: http://akvobr.ru/dualnoe_obrazovanie_v_rossii.html (accessed 10 January 2020). (in Russian)
9. Dual education: prospects for implementation in Kazakhstan. Available at: <https://www.nur.kz/1718369-cto-takoe-dualnoe-obucenie-v-kazahstane.html> (accessed 10 January 2020). (in Russian)
10. Dudyrev F. F., Romanova O. A., Shabalin A. I. Dual education in Russian regions: models, best practices, opportunities for dissemination. *Questions of education*, 2018, no. 2, pp. 117-138. (in Russian)
11. Filippov A.M. Professional mobility of the teacher – factors and conditions of its effective formation. *Improvement of professional education in the conditions of implementation of the competence approach*. Magnitogorsk, 2019, pp. 135-144. (in Russian)
12. Fortova L.K., Kuzhekov A.Yu. Professional mobility of youth at the present stage of development of the Russian society. *Young scientist*, 2015, no. 13, pp. 715-716. (in Russian)
13. Grigorieva N.V., Shvets N.A. Model of training specialists in the conditions of dual training. *Modern problems of science and education*, 2016, no. 6. Available at: <https://science-education.ru/ru/article/view?id=25763> (accessed 10 January 2020). (in Russian)
14. Kutumova A.A., Yarkova G.A. Dual system of education as a technology for training bachelors of professional education in modern conditions of pedagogical University. *Modern science-intensive technologies*, 2016, no. 4 (1), pp. 139-142. (in Russian)
15. Listvin A.A. Dual training in Russia: from concept to practice. *Education and science*, 2016, no. 3 (132), pp. 44-56. (in Russian)
16. Morozova S.A., Symanyuk E.E. Professional mobility as a factor of realization of innovative activity of the teacher. *Education and science*, 2012, no. 4 (93), pp. 50-60. (in Russian)
17. Piletskaya L.S. Professional mobility of the individual: a new look at the problem. *Young scientist*, 2014, no. 2, pp. 693-697. (in Russian)
18. Polyakova T. V. Dual training as an opportunity for social partnership. *Professional education and labor market*, 2016, no 1, pp. 2-3. (in Russian)
19. Regulations on the dual system of education. Penza, 2014. Available at: https://academy-prof.ru/files/20170331_1.pdf. (accessed 10 January 2020) (in Russian)
20. Remington T.F. Business-Government Cooperation in VET: A Russian Experiment with Dual Education. *Post-Soviet Affairs*, 2017, vol. 33, no. 4, pp. 313-333.
21. Romanov P.Y., Smirnova L.V., Torshina O.A. Teaching ways of compiling tasks as the fundamentals of the development of professional competence of future mathematics teachers. *Perspectives of Science and Education*, 2019, no 2 (38), pp. 442-452. DOI: 10.32744/pse.2019.2.33
22. Schulz K. Das duale System der Beruflichen Bildung in Deutschland. Darstellung und Kritik. Munchen [u.a.]: Grin Verl., 2004. 28 p.
23. Solga H., Protsch P., Ebner C., Brzinsky-Fay C. The German Vocational Education and Training System: Its Institutional Configuration, Strengths, and Challenges. Berlin: Wissenschaftszentrum. Berlin für Sozialforschung gGmbH, 2014. Available at: <https://www.econstor.eu/bitstream/10419/104536/1/805013571.pdf> (accessed 10 January 2020)
24. Suvorova S., Kotlyarova I., Volchenkova K., Seryapina Yu. Academic mobility and self-actualization of academic staff. *10th annual International Conference on Education and New Learning Technologies*. Palma de Mallorca (Spain), 2018, pp. 2137-2143.
25. Yashkov A.B. Installations of graduates and expectations of employers. *Educational technologies*, 2010, no 4, pp. 60-71. (in Russian)
26. Yugfeld E.A. Successful experience of the introduction of the dual system of education in Russia and abroad. *Educational science*, 2014, no. 26(1). Available at: <https://novainfo.ru/article/2506>. (accessed 10 January 2020) (in Russian)
27. Zeer E.F. Ambiguity of the phenomenon of mobility in professional education. Available at: http://elar.rsvpu.ru/bitstream/123456789/670/1/spm_2014_04.pdf (accessed 10 January 2020) (in Russian)

Информация об авторах

Беликов Владимир Александрович

(Россия, г. Сибай)

Профессор, доктор педагогических наук,
старший научный сотрудник
Сибайский институт (филиал)
Башкирский государственный университета
E-mail: belickov.vladimir54@mail.ru
ORCID ID: 0000-0003-2228-5345
Scopus ID: 57209318829

Романов Петр Юрьевич

(Россия, г. Магнитогорск)

Профессор, доктор педагогических наук, профессор
кафедры Прикладной математики и информатики
Магнитогорский государственный технический
университет им. Г.И. Носова
E-mail: Romanov-magu@mail.ru
ORCID ID: 0000-0003-4645-5441
Scopus ID: 57201742896

Павленко Дмитрий Иванович

(Казахстан, г. Костанай)

Преподаватель-организатор
Образовательный Центр ТОО «СарыАркаАвтоПром»
E-mail: dima_1371@mail.ru
ORCID ID: 0000-0002-2821-5156

Филиппов Александр Михайлович

(Россия, г. Магнитогорск)

Кандидат наук (PhD), организатор-методист, Учебно-
производственный Центр «Резерв»
E-mail: psk174@mail.ru
ORCID ID: 0000-0001-7292-2125

Information about the authors

Vladimir A. Belikov

(Russia, Sibay)

Professor,
Doctor of Education, Senior Researcher,
Sibay Institute (branch)
Bashkir State University.
E-mail: belickov.vladimir54@mail.ru
ORCID ID: <https://orcid.org/0000-0003-2228-5345>.
Scopus ID: 57209318829

Petr Yu. Romanov

(Russia, Magnitogorsk)

Professor, Doctor of Education,
Professor of Applied Mathematics and Computer
Science Department
Nosov Magnitogorsk State Technical University
E-mail: Romanov-magu@mail.ru
ORCID ID: 0000-0003-4645-5441
Scopus ID: 57201742896

Dmitry I. Pavlenko

(Kazakhstan, Kostanay)

Teacher-organizer
Educational Center of LLP "Saryarkaavtoprom"
E-mail: dima_1371@mail.ru
ORCID ID: <https://orcid.org/0000-0002-2821-5156>

Alexander M. Filippov

(Russia, Magnitogorsk)

Candidate of science (PhD), Organizer-methodist,
Training and Production Center "Reserve"
E-mail: psk174@mail.ru
ORCID ID: 0000-0001-7292-2125