

Research of Student's Professional: Self-Determination Problems and Challengers of Engineering Specialities

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Abstract — This article reflects the results of the study conducted by the authors, taking into account the activity subject of Industrial University of Tyumen on the conscious professional students' self-determination formation. The urgency of the problem is caused by the situation of unclaimed university graduates in the labour market and is, according to authors of the article, a consequence of the lack of professional self-determination among students, the imperfection of the system in vocational guidance work. The article reveals the content of the concept "professional self-determination". The results of research about students' motivation to vocational education and readiness for conscious professional self-determination are presented and interpreted. The work of Industrial University of Tyumen in the sphere of students' vocational guidance and professional counseling is considered. Theoretical research methods are the survey analysis of approaches to the study of issues of professional self-determination highlighted in domestic and foreign literature; practical methods are the questionnaire survey of students and analysis of documents. The results received during the research have confirmed the relevance of the subject. The need for professional self-determination among students is high, and every year is increasing. Creating conditions for students' professional self-determination will improve the education's quality of the university.

Keywords—*professional development of the personality, professional self-determination, labour choice.*

I. INTRODUCTION

The activity of a professional educational organization is considered successful if a young specialist, having finished training, possesses not only competencies and ability to solve professional problems effectively, but also such important component as the created professional self-determination including readiness for professional self-identification and readiness for designing his professional future.

The problem of students' professional self-determination has attracted special attention of scientists and practitioners recently. Increasingly growth of getting the higher education, not always conscious profession's choice, the loss of motivation for the future professional activity, indistinct ideas of the profession lead to the fact that many students do not always effectively complete the path of professional self-determination, even by the time of graduation. The modern sociological research shows that most of mature people who have got professional education do not work in the specialty they have chosen, or they come to understand "their

profession" only after receiving second higher education. All this happens against the background of low demand for young graduates without experience. So, according to Rosstat, youth unemployment in Russia has been increased after global financial crisis in 2008. And the greatest number of unemployed in Russia is among the youth. In 2015, the unemployment rate reached 15.1% among young people aged of 15-24 years, while the average unemployment rate in Russia was 5.8%. A high level of unemployment was observed in the age group 15-19 years (31.4%) and 20-24 years (13.4%). Unemployment among young people aged 20-29 exceeds the level among people of middle age (30-49 years) by 3.7 times [1]. Statistical data from the report "On the state of graduates' employment of vocational education institutions, in demand specialties, required competencies and expected forecasting needs" (2013) show that 57% of graduates in the Russian Federation work in the specialty, the others do not work in the chosen profession [2].

The authors suggest that the main reasons for such situation are:

- The lack of clear direction on students' career guidance;
- Insufficient connection between higher education institutions and potential employers;
- A mismatch of the professional choice of youth with the labour market requirements.

Modern students of the 2d-3d courses already start to think about the future place of employment, try themselves in different fields of activity, in order to find their way as a result. A wide profile of bachelor's degree training courses presupposes the existence of several possible options for developing professional skills among students.

The success of professional self-determination and the implementation of professional future planning largely depend on the abilities and skills of a person to assess adequately his starting capabilities available resources. His potential as well as external conditions contribute to the realization of his ideas.

In this connection, the study of the professional self-determination's problems among students of engineering specialties is of particular interest.

II. METHODS AND MATERIALS

In order to determine the most significant students' activities influencing the development of their professional self-determination, and the choice of the future job place, a

sociological survey (2016-2017) was carried out on the basis of Industrial University of Tyumen (hereinafter referred to as IUT) in which 200 students of IUT have taken part. The main part of the interviewed respondents were the students of the first - fourth courses of the full-time training at the age from 17 to 23 years.

As a research tool, there were used theoretical methods such as an overview analysis of approaches to studying issues of professional self-determination, designing a professional future in foreign and domestic science; practical methods - qualitative and quantitative analysis, monitoring the educational and extracurricular activities of the university.

An empirical study was initiated to determine the general motivation for choosing a speciality and the university. The practical research included the analysis of documents and training internship of the university, the content of subjects and programs, a students' questionnaire survey, whose goal was to analyze the motivation and value criterion of students' professional self-determination for higher education. The questionnaire consists of a closed-type question, aimed at identifying the students' motives for getting higher education. Additionally, students were asked to fill out a questionnaire to determine the level of their professional orientation (further LPO), which contains 20 statements.

III. LITERATURE REVIEW

In domestic and foreign pedagogy, psychology and sociology, a great deal of experience has been accumulated in the field of professional self-determination, which indicates the interdisciplinarity of this problem. Theories of professional self-determination of a person and vocational guidance are offered by M.R. Ginzburg, E.F. Zeer, E.A. Klimov, N.S. Pryazhnikov, A.D. Sazonov, P.A. Shavir, S.N. Chistyakova, etc. Most of the scientific paper of foreign and domestic authors are devoted to the professional self-determination of schoolchildren (D. Holland, H.Tome, G.Ris, D.Tideman, A.Kukharchuk, V.V. Ovsyannikov, I.S. Kon, D.Super, etc.) [3-13]. The authors believe that professional self-determination becomes especially important at the stage of vocational education. The students of higher educational institutions are on the way of mastering their professional knowledge, abilities and skills.

Having studied the results of the research, it is necessary to note that in the process of training and practical activity, the formation of the professional image begins to be associated with a number of socio-psychological processes such as awareness, judgment, evaluation and behaviour. At the same time, the results of work [14-19] have shown that the level of professional self-determination at the stage of vocational education at the university is insufficient and requires to create conditions conducive to the development of students' professional self-determination.

According to the theoretical sources the criteria of formation and readiness for professional self-determination have been identified. The authors have focused on cognitive, value motivational and activity-practical criteria [19].

It is generally accepted that the most important criterion for the recognition and productivity of individual's

professional self-determination is the ability to find personal significance in professional work and to design his professional future independently. The graduate's professional readiness is developing not only from his knowledge, ability and skills, but also includes such important component as professional self-determination.

IV. RESULTS AND DISCUSSION

An analysis of vocational work activities in IUT, the content of the subjects and programs of the university allows us to state that IUT is constantly working on the students' vocational guidance. The authors identified the following effective areas of work (Table 1):

TABLE I. INITIATIVES FOR PROVIDING CAREER GUIDANCE OF IUT.

	<i>Course of action</i>	<i>Activities</i>
1	Analytical activity	- monitoring of the graduates' employment and analysis carried out by employers on the quality of university training; - analysis of professional requirements for graduates; - monitoring of labour market demand.
2	Career guidance for school students	- career guidance for school students – "The center of career consultation"; - there is a lyceum with profile classes at university where pupils take advanced courses on mathematics, physics, drawing, chemistry, etc.; - school students who are interested in technical science could attend "The school of engineering reserve".
3	Interaction with organizations (employers, center of employment)	- interaction with student's and youth associations; - cooperation with employers.
4	Organization of temporary students' employment	- students support of temporary and constant employment, and also university graduates employment.
5	The labour market adoption of university graduates	- a "job fair" are held, where large companies present themselves. Scientific and practical conferences (for example, "I am an expert"), orientation tours to leading enterprises are organized; - students can work in the well equipped laboratories; take part in scientific and technical congresses, conferences, forums and competitions; - courses as "Safety Engineering" are organized; - at the Institute for Complementary Education students have an opportunity to receive diplomas of additional education in various areas.
6	Information-consultative support	- the higher education institution carries out guidance work on employment problems.
7	Organization of students' educational internships	- interaction with organizations to ensure students' educational internships.
8	Others	- participation in international and Russian grants and competitions. There is an "Association of graduates of IUT-TSOGU", which creates a community of graduates of different years to hold festivals, competitions, and meetings for maintaining its goals.
		In the IUT's curricula, there are such vocational orientation subjects as "Introduction to the profession", "I am an engineer", and thus, students from the initial courses have the opportunity to get acquainted with their future profession.

One of the indicators of the university's efficiency is the employment of graduates (Table 2).

TABLE II. GRADUATES' EMPLOYMENT OF IUT FOR 2014/2015 ACADEMIC YEARS.

	2013/2014	2014/2015	2015/2016
Amount of graduates	6950	7698	6079
Share of graduates' employment	85%	90%	85%

The table shows that the number of employed students graduated from the university, is quite high, which proves the efficiency of career guidance work.

The second stage of our study was to determine the level of students' motivation for higher education, as well as their willingness to design professional future. The equal number of respondents from each course participated in the research. The survey is a basic method. The survey form is the anonymous questionnaire. The questionnaire purpose is to identify the main problems of students' professional self-determination, and their motivation for getting higher education.

The questions were aimed to find out:

- Students' future employment intention on the chosen speciality;
- Students' awareness of the professional self-determination problem;
- Criteria for choosing speciality and University;
- Students' awareness of the existed career guidance work at IUT.

The study results showed that the main cause to get higher education among students (Figure 1) is willing to be educated (40%) and 36% of students would like to promote in the chosen professional area in the future. At the same time the preferable motive for the freshmen is "desire to be educated" and for undergraduates - "career". It is worth mentioning that 70% of students consider the higher education as a guarantee of successful life. However, the vast majority of respondents (80%) found that the main reason for getting the higher education is the requirement of modern employers. The existence of the interesting specialities (55%) become the main criterion for the university choice. The questionnaire survey found that students choose the University and speciality often independently-56%, but only one third of the respondents are confident that they would work on the chosen speciality. Other students are not sure in finding a job after University graduation.

The University's significant role in formation of students' professional self-determination (Figure 2) is indicated by 35% of respondents. Other 45% of respondents do not believe in a possibility of the University's influence on their professional self-determination. However, they assume that assistance from the University may be provided.

During the research the main problems (Figure 3) of professional self-determination have been revealed. Students define that the main barriers are "inability to use their time, knowledge, skills" (40%), "inability to cope with stress" (15%), "lack of clear professional goals" (12%). "Lack of the self-presentation abilities" (33%) become a significant drawback for students in the choice of their professional way.

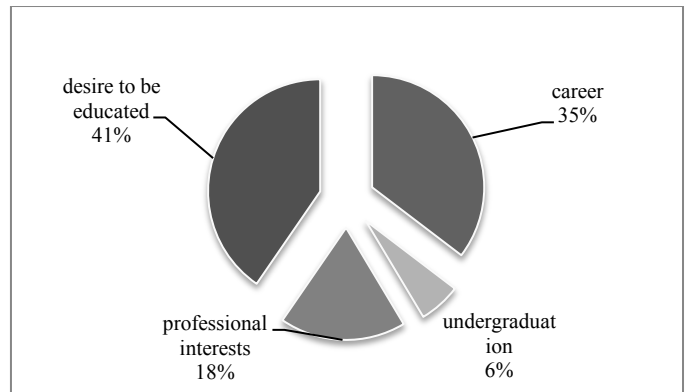


Fig. 1. Motives of getting higher education.

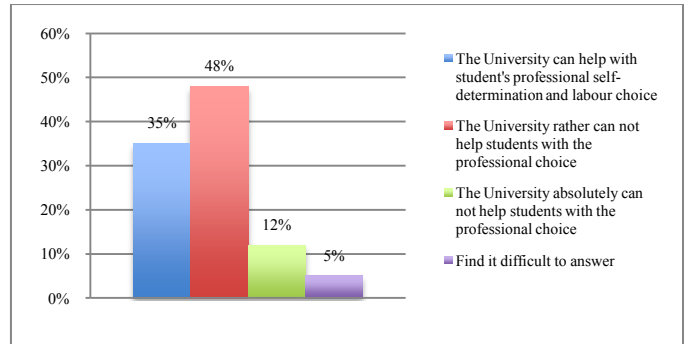


Fig. 2. The University's role in the formation of students' professional self-determination.

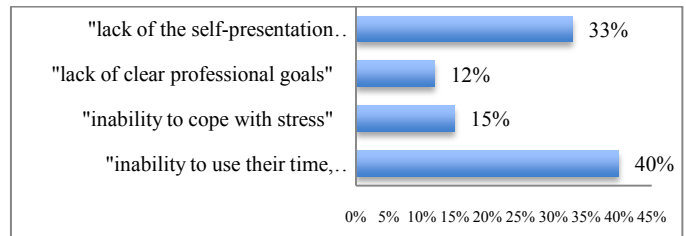


Fig. 3. Problems of students' professional self-determination.

The main reasons for the students' unwillingness to work according to the speciality after graduation are the lack of sufficient information on employment possibilities and misunderstanding the promotion perspectives (Figure 4).

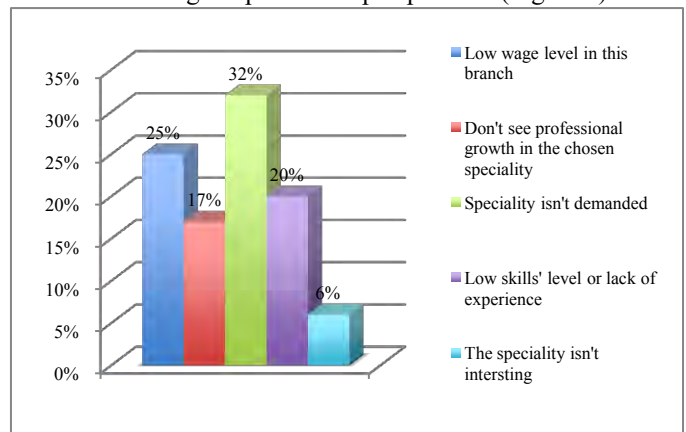


Fig. 4. Reasons for the students' unwillingness to work on the chosen speciality.

In addition, students are asked to evaluate the types of activities that could affect their professional self-determination during their studies at the University. Among them are: job training; mastering a working profession while studying at the university; studying of the profession theoretical bases; paid work, combined with study; additional professional education; international internship.

According to the students, the most significant activity influencing on the professional self-determination is job training. 59% of respondents gave an assessment of 5 points. With the help of industrial job training students are involved in the process of independent professional activity, it gives an opportunity to learn the basics of the future profession. During job training initial formation of students' professional plans and strategies take place. By results of job training in 2016, 93% students of engineering specialities did practical training at the enterprises.

Such factor as «mastering a working profession, within studying at the university» receives a fairly high rating (an average of 4.3 points). Students realize the necessity to get working professions that promote their own opportunities both in terms of professional self-awareness and in terms of future employment. It should be noted that every year the number of IUT's students who combined working courses with study at the university is growing. Enterprises-employers put forward special requirements to students who have been sent to work placement. One of them is getting working profession certificate. These enterprises are mainly engaged in exploration, production and processing of oil and gas.

Such aspect as "studying the profession theoretical bases" (the average score – 4.2) suggests that the educational system, methods, forms and organization of training at the university stimulate the formation and development of IUT graduates professional self-determination.

Modern students at the stage of getting higher education try to combine their training with work. Work combined with study allows students not only to earn extra money, but also to gain work experience, which would help them in further employment. In 2015 90% of graduates have already got a job by the time of graduation.

Additional professional education has received a relatively low rating (an average of 3.6 points). It is a kind of "help" when University graduates enter the labour market and could make them more competitive in finding a job. According to the research students of Institute of Transport (IT) and Institute of Geology and Oil and Gas Production (IGOGP) receive additional education in language training courses "Interpreter in the field of professional communication", as well as "Master of Business Administration".

The internships are highly appreciated by the students of engineering specialities. International internships are important and significant for students learning foreign languages and willing to work in a foreign company.

Then the students are asked to choose the type of professional activity in which they would like to develop professionally and to achieve results. According to the students' answers there are set the following priorities of preferred occupations (Figure 5):

- Administrative and management activity - 41% (of the total number of respondents);
- Operational and production activity - 24%;
- Entrepreneurial activity - 15%;
- Research activity- 20%.

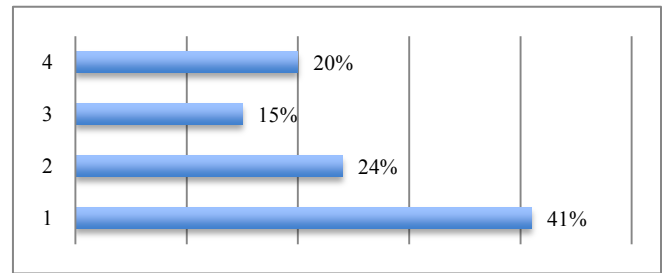


Fig. 5. The diagram of the work activity preferences by students: 1 – administrative and management activity; 2 – operational and production activity; 3 – entrepreneurial activity; 4 – research activity.

Apparently, 41% of students prefer an administrative and management activity, despite of the fact that modern labour market doesn't offer university graduates administrative and management positions in employment. Operational-production and research activities are selected by almost half of the interviewed graduates. That corresponds to the results of the graduates' distribution and their future employment.

It is also important to note that only 15% of the IUT's surveyed prefer to do their own business. Students of the 1st and 2nd courses often answered this question with difficulty. A possible reason is the fact that the students of the initial courses don't have experience of professional activity and it is complicated for them to determine exactly where they would be most successful.

Students of the Institute of Geology and Oil and Gas Production give preference to operational-production activities, on the second place – research activity, and in last turn they choose entrepreneurial and administrative activity. The same can be noted for graduates of Transport Institute and Industrial Technology and Engineering Institute.

At the time of graduation the university, students face the problem of realizing their professional plans. Choosing the defining factors in the decision making of the work place students' preferences look as follows:

- Career development possibility – 4.7;
- Wage level – 4.7;
- Possibility of new experience and knowledge training – 4.4;
- Social benefits – 4.4;
- Intellectual level of duties – 4.3;
- Company's image – 4.0;

Data are presented in the diagram on Figure 6.

Respondents give priority to "wage level" and "career growth opportunities", which indicates the development of external motivation regarding the choice of profession. According to the survey data authors could consider when students choose the administrative activity as determining factor, they focus on vertical career building. Such factors as "intellectual level of duties" and "possibility of new

experience and knowledge training" received a low evaluation, which indicates an insufficient level of internal students' motivation, and moreover future specialists unreadiness to build their professional career.

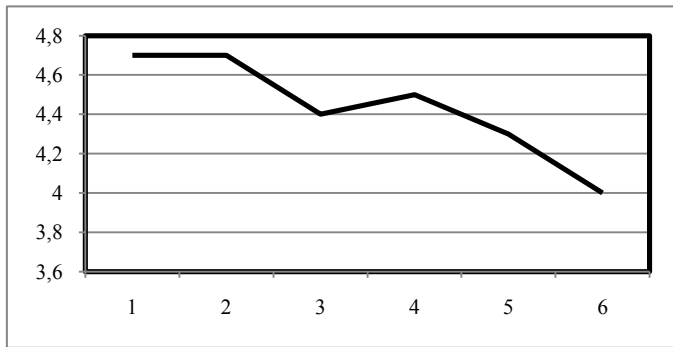


Fig. 6. Determinative factors in choosing the work place: 1 – wage level; 2 – career development possibility; 3 – possibility of new experience and knowledge training; 4 – social benefits; 5 – intellectual level of duties; 6 – company’s image.

V. CONCLUSION

Thus, according to the results based on the theoretical and practical research, the authors can conclude that an active work in students' career guidance at Industrial University of Tyumen is carrying out (e.g. educational placements, the "Fair Vacancies", scientific and practical conferences, congresses, forums, competitions, engineering internships, meetings with experts, and so on). Based on the study some subjects intended to awareness with the future professional activity in the educational programs of the IUT. However, during sociological research the authors have received contradictory results indicating that students of initial courses have an interest in getting a chosen profession, but by the end of their training they lose the interest in their speciality. The authors associate these results with low pedagogical support and the lack of skills in designing future professional activities.

The main criteria determining the level of students' professional self-determination should be considered: students’ identification as a specialist in their professional field; stability focusing on the chosen profession; finding satisfaction in professional training; concreteness of professional plans for the future; achieving professional goals.

The analysis of the sociological survey’s results allows to define the most common problems of students' professional self-determination:

- Students' inability to identify various types of professional activity and to choose the most successful type of activity.
- Mismatch of students' priority areas for future professional activity and the real situation on the labour market.
- Low level of internal motivation by choosing professional activity and future work place.

According to the research it is necessary to optimize the process of students' professional self-determination. It is not enough to give only general theoretical knowledge, it is no

less important to support future professionals with special training in professional self-determination, and create conditions where students would be able to determine their professional future.

Based on the theoretical and research data for the optimization of students’ professional self-determination process it is necessary to design a model.

The authors offer the model for optimizing the process of students' professional self-determination [20]. The model is presented on Figure 7.

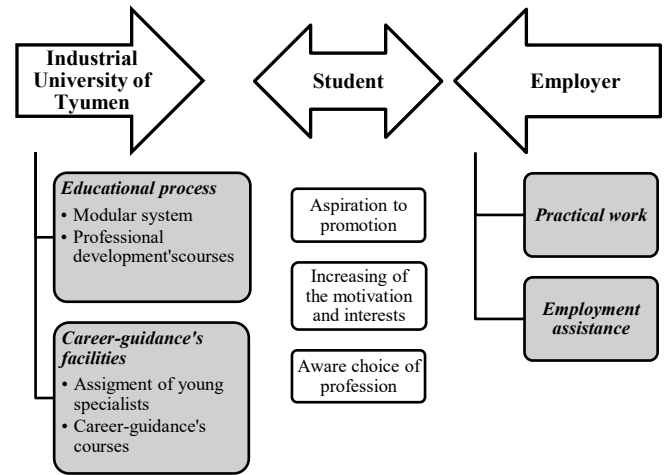


Fig. 7. The model for optimizing the process of students' professional self-determination.

The model presents existence of three components: "IUT", "Employer" and "Student". IUT is considered to continue the integration of the modular system training within the educational process, to conduct training courses for certain specialities in order to do interning at the oil and gas enterprises.

The survey results show that the interaction of the "IUT" - "Employer" needs to be improved. The university mainly carries out only the organizational part of the students' internship (it finds enterprises for students to do traineeship, but not for all specialities). This interaction is often onesided, and «Employer» is not interested in establishing this relationship. For this purpose the university needs to get potential "Employers" who are interested in promoting the students employment.

All listed activities have to be carried out on the basis of the general strategy of the university career guidance. The solution of the professional self-determination problems will allow to increase overall performance of IUT.

References

[1] A. Voronin, V. Gurtov, L. Serova, “Status of professional institutions graduates’ employment in demand to required competencies and expected forecast staffing needs based on monitoring in 83 subjects of the Russian Federation. (Analytical report)”, Petrozavodsk: Publishing House, 2012, p. 356.

- [2] Monitoring trudoustroystva vypusnikov I molodyh specialistov (2016). Retrieved from <http://docplayer.ru/42095740-Monitoring-trudoustroystva-vypusnikov-i-molodyh-specialistov.html>.
- [3] E. F. Zeer, E. E. Symanyuk, "Individual'nye obrazovatel'nye traektorii v sisteme nepreryvnogo obrazovaniya", vol. 3. Pedagogi-cheskoe obrazovanie v Rossii, 2014, pp. 74-82.
- [4] N. S. Pryazhnikov "Professional self-determination: theory and practice", Moscow: Academy, 2008.
- [5] Ye. A. Klimov, "Obraz mira v raznotipnykh professiyakh." M.: Izdatelstvo Moskovskogo universiteta, 1995.
- [6] N. S. Pryazhnikov, "Psikhologicheskiy smysl truda", M.: In-t prakt. psikhologii, 1997.
- [7] E. V. Goncharova, R. M. Chumicheva, "Organizatsiya individual'noy obrazovatel'noy traektorii obucheniya bakalavrov", Vestnik NGGU, vol.2, 2012, pp. 3-11.
- [8] S. N. Chistyakova, "Professionalnaya orientatsiya», M., 1983.
- [9] D. Holland, "Identity and agency in cultural worlds", Cambridge, MA: Harvard University Press, 2001.
- [10] D.E. Super, "The psychology of careers", N.Y.: Harper & Brothers, 1957.
- [11] D.E. Super, "Vocational development", N.Y.: Harper & Brothers, 1957. p. 391.
- [12] E.L. Deci, & R.M. Ryan, "The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior", Psychological Inquiry, vol. 11, 2000, p. 227-268.
- [13] R.M. Ryan, & E.L. Deci, "Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being". American Psychologist, 2000, pp. 68-78.
- [14] Problems of professional self-determination of the youth: Analysis of value orientations and professional strategies. Analytical report on the materials of sociological research (2010–2011). Ekaterinburg, in press.
- [15] U. A. Fyodorova, "Student's professional self-determination in the system of higher education", vol. 1, Pedagogical Education in Russia, 2011, pp. 269-273.
- [16] T. A. Kolesnikova, "Features of motivation professional self-determination of students of engineering and humanitarian specialties in technical University", Izvestia: Herzen University Journal of Humanities & Science, 76 (2), 2008, pp.132–138.
- [17] E. S. Tolstoles, "Specifics of formation and structure of professional identity of the person in training (on example of medical students)", Tomsk State Pedagogical University Bulletin, 11 (139), 2013, pp.113–117.
- [18] E. Y. Valitova, "Problems of professional self-determination of students at technical university", TSPU Bulletin, 4 (145), 2014, pp.157-162.
- [19] S. F. Shlyapina, "Formation of Professional Self-Determination of Students of High School", Vesnik TSU, 7, 2006, pp.198-202.
- [20] E.M. Sharipova, V.V. Udashkina, S.A. Kovalevskaya, N.D. Laletina, "The problem of professional self-determination of students in sociological discourse", News from Higher Educational Institutions. Sociology. Economics", Vol.4, IUT, Tyumen, 2017, pp. 82-86.