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TÍTULO: Potencial de innovación de las instituciones de educación y formación profesional como base para la formación profesional de alta calidad.

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RESUMEN: El propósito del estudio es desarrollar un sistema práctico para interconectar el potencial de innovación de la institución VET y desarrollar la preparación de los graduados para la práctica profesional de acuerdo con las condiciones externas del sistema regional de educación vocacional. El estudio confirmó la razonabilidad de incluir el componente clave "especialista calificado" en el sistema "economía - mercado laboral - educación vocacional", que garantiza una renovación continua e interconectada de recursos en cada nivel de las actividades sistémicas. El documento proporciona la base de la metodología para la organización integradora del proceso de aprendizaje, que permite registrar, diagnosticar y evaluar el desarrollo educativo, profesional y personal de los estudiantes como futuros especialistas.

PALABRAS CLAVES: Preparación, práctica profesional, satisfacción con los servicios educativos, calidad de la formación profesional, criterios e indicadores de calidad.

TITLE: Innovation potential of vocational education and training institutions as a basis for high quality professional training.

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ABSTRACT: The purpose of the study is to develop a practical system to interconnect the innovation potential of the VET institution and to develop the preparation of graduates for professional practice in accordance with the external conditions of the regional system of vocational education. The study confirmed the reasonableness of including the key component "qualified specialist" in the system "economy - labor market - vocational education", which guarantees a continuous and interconnected renewal of resources at each level of systemic activities. The document provides the basis for the methodology for the integrating organization of the learning process, which allows recording, diagnosing and evaluating the educational, professional and personal development of students as future specialists.

KEY WORDS: Readiness, professional practice, satisfaction with educational services, quality of vocational training, quality criteria and indicators.

INTRODUCTION.

Vocational education is an important part of human life. In the modern context, vocational education appears; on the one hand, as a system aimed at achieving of the strategic national goals in the social and economic, social and other areas of the community life (Strategy for Innovative Development of

the Russian Federation until 2020). On the other hand, modern vocational education should be highly flexible in relation to the individual needs of students and the requirements of the evolving labor market associated with rapid development of innovative production technologies, renewal and changes in technologies and the conditions for organizing the working process (Panina 2010). In fact, the question is the need for vocational training of specialists of a new breed, which would be highly competitive, professionally competent, professionally and socially mobile.

At the same time, since the transition of Russia to market economy and an open system of vocational education in the labor market context (Smirnov 2006), there is a still urgent imbalance between the needs of the developing economy in in-advance training of qualified personnel at VET institutions and the insufficiency of theoretically based approaches for building career readiness of graduates of VET institutions in the changing social and economic context.

Major efforts have been and continue to be made to resolve this imbalance. For example, to modernize and develop the vocational education system, a number of experiments have been carried out in the area of efficiency improvement in VET institutions, and the findings were implemented into Russian vocational education practice. Those were experiments on the regionalization of the vocational education system; searching and testing efficient funding mechanisms for educational institutions; creating models of interaction with social partners (Panina & Dochkin 2014), etc. Integration processes in vocational education were launched with the ultimate goal of creating an efficient self-developing system of continuous vocational education. The National Qualifications Framework of the Russian Federation (Blinov, 2006) has been created, the National System of Professional Qualifications of the Russian Federation is being created, professional standards are being actively developed and implemented in actual professional practice.

Nevertheless, findings from a number of nationwide sociological researches indicate that vocational education, regardless of the level does not fully meet the requirements of future specialists

themselves, employers and the community as a whole. Researchers emphasize (Kuteitsina & Reprintseva 2006) that "vocational education cannot resolve the problem of training the workforce because of new requirements to the level and quality of qualifications of specialists, for whom it's a major challenge to adapt to market relations..." Most graduates of VET institutions become "disappointed" in their choice profession and education after they start to independently work in their degree field (Tkachenko, 2012; Gorshkov & Sheregi 2010) etc.

Therefore, the demand for specialists in all the segments of the labor market is accompanied by an imbalance between the requirements of employers to qualifications, fields, contents and outcomes of vocational training and professional expectations of the graduates of VET institutions themselves (Kyazimov 2017, Panina et al, 2010; Dezhkam, 2017).

The optimal solution to the existing problem is to efficiently use the potential of VET institutions to achieve the goals of social and economic development of the country and its regions, to ensure the compliance of the quality of vocational education with the current and prospective needs of the labor market at various levels, to increase the competitiveness of graduates of VET institutions and their innovation readiness. At the same time, it should be understood that that the essence of the potential of VET institutions lies in innovation. Only once this condition is met, schools can ensure that graduates are ready for practice in line with the specific features of current social and economic processes.

The study of ways to develop the innovation potential of VET institutions is a fundamental scientific problem (Kostyuk 2013), which is at the same time connected with the need for high practicality of the proposed solutions. Therefore, the purpose of this study was to develop a concept for interlinking the innovation potential of the VET institution and building readiness of graduates for professional practice in accordance with external conditions of the regional vocational education system.

For the purposes of this paper, these terms are defined as follows:

- "Innovation activities" — activities that ensure a new quality of labor outcomes which comply with the changing needs of the economy and satisfy the needs of the subject of the professional activity.

- "Innovation potential of VET institutions" — the capability of the VET institution to transform the established approaches to the structure and contents of the learning process in order to meet the needs of subjects of educational activity in accordance with the changing needs of the developing economy. The structure of the innovation potential of VET institutions includes three components: purpose, resources and procedure, which determine the continuous interlinked development of the innovation potential of educational organizations, which in turn becomes the fundamental resource for building graduates' innovation readiness.

- "Innovation readiness" — a natural outcome of vocational education in the form of graduates' willingness and capability to effectively unlock their motivational, practical and cognitive potential in the professional practice.

The further details of the study and its outcomes are presented in the following sections: Concept, Methods, Outcomes and analysis, Conclusion.

DEVELOPMENT.

Concept.

The concept of the interrelation between the innovation potential in the VET institution, the career readiness of graduates and the external context of the regional vocational education system is based on the idea to apply an unconventional approach to establishing the interrelation between the labor market and vocational education, i. e. including the "qualified specialist" key component in the "economy — labor market — vocational education" system. The inclusion of this element in the system ensures a continuous interconnected renewal of resources at each level of the system. With this approach, the transition is carried out from the idea that graduates of the VET institution can only

be prepared to professional/innovation activities through pedagogical methods and this primarily depends on the skills of the faculty, to the process based on the innovation potential of VET institutions in its threefold structure (purpose, resources and procedure components).

The essence of this concept is the integration of the systemic, activity-based and integrated modular approaches as a special kind of theoretical and practical activity. The systemic nature allowed to distinguish and ensure the completeness of the components of achieving the goal: to identify the relationship and interdependence among the components of the concept, to define the backbone element that integrates the components into the system. This ensures a qualitatively new outcome: improved readiness of the graduates for professional/innovation activities. The activity-based aspect allowed to link the above components of the concept, so that obtaining occupational skills at a school would best develop the professional and personal potential of students as the resource for the innovative development of Russian economy. The integrity of this concept is ensured by its focus on streamlining the interrelation of the conditions, goal, contents, organizational and procedural implementation of training and evaluation of the outcomes.

The key ideas of the concept of the relationship between the innovation potential of the VET institution, career readiness of graduates and the external context of the regional vocational education system are implemented in the following components of the concept:

Component 1: to take into account the conditions determining the development of the innovation potential of VET institutions as the basis for building career readiness in the specific region (Kostyuk & Falomkin, 2011).

Component 2: to develop the regional innovative infrastructure (Dochkin et al, 2012).

Component 3: a set of mechanisms for interaction between the labor market and the vocational education system on a qualitatively new level, including algorithmization of matching the employers'

requirements and federal state educational standards of vocational education with graduates' qualifications (Kostyuk, 2012).

A particularly interesting highly applicable finding of this study is the influence of subjective perception on assessment of conditions and outcomes of education by the participants of this process (students, i. e. future graduates, and their parents), which appear both as educational services consumers and members of the community. The attitude of students and their parents is one of the conditions that determine the readiness of graduates of VET institutions to innovation activities (an element of Component 1 of the concept).

It was stated above that the state education policy is aimed, among other things, at meeting people's educational needs; and this study assesses the innovation potential of VET institutions based on satisfaction of students and their parents with their school. At the same time, in order to improve the objectivity of the outcome, it was deemed reasonable to apply the method of ranking educational organizations to assess the innovation potential of VET institutions. An important result of testing and implementing the main ideas and elements of the concept into the regional vocational education system was the possibility to calculate the comprehensive index of the innovation potential of the VET institution.

Materials and methods.

The scientific goal of assessing the innovation potential of VET institutions as the basis for quality training required a large-scale longitudinal study, which began in 2008. The following key methods were used in the study: monitoring, survey, rating, expert assessment. It should be noted that during several stages of monitoring, both the monitoring tools and the survey procedures were being tested and adjusted. Based on the expediency factor, this paper presents the analysis of four cross-sections (2011–2015) of the monitoring of satisfaction of educational services consumers with the learning conditions and outcomes. It is noteworthy that the procedure and methods for assessing the

satisfaction with the learning process, etc. has become an integral part of vocational education quality assessment in the regional educational system (Pakhomova, 2016).

The method of monitoring of the satisfaction of educational services consumers with the learning conditions and outcomes made it possible to regularly assess the actual state of opinion among students and their parents (legal representatives) on the organization and implementation of the learning process at VET institutions.

While the monitoring of satisfaction of educational services consumers with the learning conditions and outcomes is the research method used to determine the frequency of data collection for analysis with an interim adjustment of the objects and the sample population for the study, the key method of data collection within the monitoring was survey of students and their parents (Kostyuk, 2016) or legal representatives using a specially designed questionnaires for each category of participants (Kostyuk, 2013).

The questionnaires are compiled in the same logic. Each of them has seven sections:

- Satisfaction with the choice of education institution;
- Satisfaction with the learning process;
- Satisfaction with the process of industrial training;
- Satisfaction with infrastructure and facilities;
- Satisfaction with the organization of leisure activities;
- Satisfaction with the support of healthy lifestyle and sports;
- Satisfaction with learning outcomes.

The last (8th) section is aimed at identifying the factors that influence satisfaction with the choice of school and includes questions to evaluate social, socio-economic and socio-psychological characteristics of respondents.

Each section includes questions that meet the key criteria of subjective assessment of VET institutions. For example, the "Satisfaction with the choice of educational institution" section is aimed at identifying opinions on such criteria as:

- Whether there were alternative schools (the answer choices are: I considered 1—2 other options; I considered 3+ other options, I chose my school beforehand);
- Reasons for choosing the school (the answer choices: I can study the degree I like; I can obtain a high-paying profession; The school provides a good foundation for further education; It's easy to find a job after graduation; Admission is easy; Studying is easy; Acquaintances/friends study here; Parents used to study here, relatives study here; It was my parents' advise; I had admission advantages; Friends/relatives work here; Education is free/affordable; The school is reputable; The school has an extensive resource/technical base (library, computers, lab/production equipment, etc.); The faculty is good/qualified; I failed to enroll in another school; There are no other schools in my town; The school location is close to my home);
- Alternative education route (the answer choices: I would enroll in my school for the same degree program; I would enroll in my school for another degree program; I would choose another college or vocational school; I would stay in high school; I would try to make into a higher education institution; I would start working; I'm not sure).

The surveys in the course of the monitoring were carried out annually from November through December (in the first semester of the academic year). Students and their parents were interviewed in the school buildings. Parent-teacher conferences were organized to survey parents, and the students were surveyed during the classes.

Parameters of samples by groups of respondents:

1. Students — the quota sample (10% of students in the VET institutions), quota indicators — the training program, the training field, year of study;

2) Parents — expert survey.

These volumes were sufficient to identify general trends for VET institutions and to carry out the monitoring. The sampling error for the regional array did not exceed 3.4% at a confidence coefficient of 0.96.

During the monitoring in Kemerovo Oblast, the outcomes of which are presented in this paper (4 cross-sections), the surveys spanned 53 VET institutions (Panina & Kostyuk, 2014). Those included:

- Three branch resource centers for training qualified labor force and specialists:
  - Specialists in the coal mining industry at Kemerovo Mining Technical College (Kemerovo);
  - Specialists in the metallurgical industry at Kuznetsk Industrial Technical School (Novokuznetsk);
  - Specialists in agriculture at Yurga Technical School of Agricultural Technology and Service (Yurga).
- Five VET institutions — complexes of continuous multi-level vocational education:
  - Novokuznetsk Professional College;
  - Yurga Technological College;
  - Kemerovo State Professional Pedagogical College;
  - Kuzbass State Technical School for Architecture, Geodesy and Construction;
  - Yurga Technical College of Agricultural Technologies and Service, within the Professional School No. 78.
- Nine basic institutions of primary and secondary vocational education;
- Eight regional pilot platforms for vocational education.

Thus, the monitoring involved:

1st cross-section of the monitoring: 2680 students, 997 parents;

2nd cross-section of the monitoring: 2683 students, 980 parents;

3rd cross-section of the monitoring: 2547 students, 277 parents;

4th cross-section of the monitoring: 2592 students, 422 parents.

The methodology for ranking VET institutions.

The rating score is the total points received for the quality of activities, determined through organized monitoring (Panina et al, 2008). The rating of VET institutions is defined as the outcome of a comprehensive assessment of their activities in the form of a ranked distribution of VET institutions in a general list according to the value of the total score of the educational organization (the "total score"). The total score reflects the key aspects of the activities at the VET institution: learning process, faculty, infrastructure, financial and economic provision, efficiency of the activities in the labor market, development of the organization's potential. The above total score is calculated based on objective data on the organization (Pakhomova, 2017).

$И_{поо}$ is calculated by the formula (1):

$$И_{поо} = \sum_{i=1}^{n} k_i \times И_i \quad (1)$$

where$И_i$ — index for i-th aspect of VET activity, k_i — the significance coefficient of the i-th aspect, n — the total number of VET activities being evaluated.

$И_i$ is calculated by the formula (2):

$$И_i = \sum_{j=1}^{m} y_j - \widetilde{X}_j \quad (2)$$

where $\widetilde{X}_j$ ~ — normalized value of the j-th indicator for the i-th aspect of the activity, y_j — significance coefficient of the j-th indicator of the i-th activity, m — the total number of indicators used to evaluate the i-th aspect of the activity. Since the measurement units for the indicators under study vary, the indicators are normalized before the calculation of $И_i$.

To normalize the indicators whose values are associated with a monotonically increasing dependence with the relevant aspect of activity (the higher the value, the better the state of the aspect), Formula (3) is used for all indicators except indicators 1.2 and 5.3:

$$\widetilde{X}_j = \frac{X_j - X_{j(min)}}{X_{j(max)} - X_{j(min)}} \times 10 \qquad (3)$$

where $\widetilde{X}_j$ — value of the j-th indicator for the VET institution; $X_{j(max)}$) and$X_{j(min)}$ — the maximum and minimum values of the j-th indicator among the VET institutions included in the rating procedure. To normalize the indicators whose values are associated with a monotonically decreasing dependence with the relevant aspect of activity (the higher the value, the worse the state of the aspect), formula (4) is used for indicators 1.3 and 2.3:

$$\widetilde{X}_j = \frac{X_{j(max)} - X_j}{X_{j(max)} - X_{j(min)}} \times 10 \qquad (4)$$

The list of indicators for ranking of VET institutions corresponds to six aspects of the activities of the educational organizations. They reflect regional specific features and come with the respective importance coefficients (k_i and y_i). The significance coefficients are presented for each of the 25 indicators as well as for aspects of the activities (Pakhomova, 2015).

The method of calculating the comprehensive index of the innovation potential of VET institution.

The comprehensive index of the innovation potential of the VET institution that is based on the correlation of a multifactorial objective and subjective assessments of the quality (conditions and outcome) of vocational education is calculated as the arithmetic mean of the total scores in the rating and the sociological evaluation. This index is measured on a 5-point scale, 5 being the maximum value that corresponds to the best possible score of the VET institution, both by objective indicators and by assessment of the concerned parties, 0 being the minimum value (Pakhomova, 2015).

Outcomes and analysis.

The monitoring of assessment the activities of VET institutions by educational services consumers (2011–2015) showed the consistency of the reasons for choosing a VET institution for further

education. The first cross-section of the monitoring showed that approximately equal numbers of students considered applying to 1–2 educational institutions, or they chose their VET institution beforehand (42.4% and 41.7% respectively). The subsequent cross-sections showed that the motivation pattern of the high school graduated did not change. Approximately the equal number of students considered applying to 1–2 educational institutions, or decided in advance with their choice (the second monitored cross-section: 48.2% and 42.4% respectively; the third monitored cross-section: 47.9% and 44.9% respectively).

Priority reasons for choosing a VET institution did change (criterion: "Reasons for choosing the educational institution"). For instance, the first cross-section revealed the prevalence of such reasons as: "easy admission tests" and "high qualification of teachers" (30.58% and 27.16% respectively). Those reasons are followed by "high quality of training in the chosen degree field" (22.06%) and reasons related to interpersonal relations (20.84%).

The second cross-section of the monitoring showed a change in motivation for choosing a VET institution towards:

- High qualification of faculty (35.4%);
- High quality of training in the chosen profession (32.5%);
- Affordable education (24.7%);
- School reputability (23.7%);
- "Friends/acquaintances study here" (20.6%).

The third cross-section of the monitoring revealed the prevalence of the reason "I can study the degree I like" (56.5% of respondents). "Good preparation for further education" was chosen by 24.7% of respondents.

16.4% of the students reported that the qualification of the faculty was important for choosing the VET institution.It is noteworthy that the reason "Free or affordable education" was rather significant for students of VET institutions. Such students accounted for 19.9% of the respondents.

The data from the first three cross-sections of the monitoring of the assessment of educational activity by parents (legal representatives) on the criteria related to the choice of the VET institution for the education of their child did not differ significantly from students' responses. However, their position was more specific in determining the reasons for the choice they made and it also changed in the course of monitoring. According to the first cross-section, 33.5% of parents noted that the choice of an educational institution was influenced by the professional qualifications of faculty, 28.1% mentioned the opportunity to obtain a free vocational education. Easy admission and proximity to home were picked by 23.5% and 19.1% of parents respectively.

When assessing the independence of choice of the degree field and the educational institution by their child, an approximately equal number of parents said they made the decision together with the child (43%) and that the child made it on their own, since they would have to take care of their own life (43.3%). Only 14.4% of parents answered that they were responsible for their child's fate, so they were more active than children in choosing the school. At the same time, only 7.5% of students reported parents' advice as the reason for choosing their school.

By the time of the third cross-section of the monitoring, the parents of the students became more focused on the high level of faculty qualification, affordability of education and territorial proximity. The factor of "school reputability" became more relevant for the parents.

The fourth cross-section of the monitoring (the final one at the first stage of the study) regarding the criterion "Reasons for choosing the educational institution" show a change in the ratio of indicators. For instance, the reasons for the choice of school by the students was almost equally divided between "I considered 1—2 other options" (47.9%) and "I chose my school beforehand" (44.9%). The parents

mostly gave the same two responses, but the distribution was different: 63.03% of parents made their choice beforehand and only a third (30.57%) "considered 1—2 other options".

Also, opinions vary as to the reasons for choosing the school: students mostly reported that at the VET institution they can study the degree they like (56.5%), which is followed by the answer "the school provides a good foundation for further education" (24.7%). The parents' answers distribution was different: 42.89% of parents (legal representatives) replied that "The faculty is good/qualified" as the reason for choosing the school; affordable education and territorial proximity to home were reported by 27.25% and 24.41% of the respondents, respectively.

In the course of monitoring, the indicators of the criterion "expected learning outcomes" remained relatively consistent. For parents, the most important result of professional training was the certificate on the level of vocational education. The first cross-section revealed 40.0% of such parents, by the fourth cross-section the number was 35.07%.

The indicator "obtaining occupational skills that are interesting to the child and is in line with their abilities" was reported on the final cross-section by 31.99% of parents (29.0% in the first cross-section). The value of the indicator "practical capabilities and skills that can immediately be applied at work" changed from 20.0% to 17.3% within the period of the four cross-sections.

Students' indicators on the criterion "expected learning outcomes" showed that more than a half of respondents aim at obtaining knowledge in their degree field (52.1%). 20.0%, 12.9% and 10.0% of students reported the opportunity to continue education, to obtain a certificate, to start working as soon as possible, respectively. The indicators of these criteria did not change significantly in the course of the monitoring.

Teaching and vocational training at VET institutions were assessed through the analysis of students' satisfaction with production training and industrial work placement, the outcomes of professional

training and personal attitude to the choice they made as to the degree field and the school to study in.

When characterizing the organization and the actual process of industrial training and practical training (the fourth cross-section of the monitoring), 73.9% of the students reported that those classes provide them with the necessary capabilities and skills for further professional practice. One-fifth of the respondents (18.7%) reported that the industrial and practical training at the VET institution will allow them to obtain a higher qualification in their degree field (compared to other students). The evaluation by students of the quantity of knowledge they obtain for the future efficient professional activity is also positive: 71.4% of the students believe that their knowledge in the degree field fully reflects the content and specific features of the professional activity.

Despite the students' high opinion of the learning process, it was alarming that the indicators of students on the criterion "Wish to study at an enterprise of the industry, where the future profession is in demand, and not in this school" showed an increasing preference of vocational training at enterprises (if appropriate conditions are in place) (Table 1).

Table 1. Indicators by the criterion.
"Wish to study at an enterprise of the industry, where the future profession is in demand".

Indicator	Students' responses, %			
	1st cross-section	2nd cross-section	3rd cross-section	4th cross-section
Rather yes	35.8	41.0	53.5	74.7
Rather not	24.0	33.0	16.1	11.0
Not sure	40.2	26.0	30.1	14.1

The assessment of the innovation potential of the VET institutions required to include into the monitoring the indicators that allow assessing the opinions of students and their parents regarding the prospects of the graduates' future professional activity.

In the conditions of vocational education, the prospects largely depend on the level of organization and technological equipment of industrial training and industrial work placement.

As noted above, most students say that the classes of industrial training (practical training) allow them to obtain professional capabilities and skills and prepare them for successful completion of the industrial work placement parallel to learning modern industrial technologies and equipment.

The opinion of the students about the technologies they are learning at their school has not changed significantly in the course of the monitoring; for example, the technologies that learners study at VET institution were evaluated in the final cross-section of the monitoring as "the technologies used by leading enterprises" — 24.7% of the students (the first cross-section — 42.0%). 36.1% of students (in the first cross-section — 27.0%) said that the technologies they study were "sufficiently modern", but they also noted that they were aware of more advanced technologies. The number of respondents who determine the technologies they were learning as "the most advanced technologies used in actual production" and those that were not sure amounted to 15.1% and 17.4% respectively. The monitoring analyzed the assessment of the resource provision of the learning process at VET institutions, including infrastructure and facilities.

In the course of each of the four cross-sections, the respondents (students and parents) were asked to evaluate their school according to a number of indicators, on a five-point scale. Respondents' assessment of the learning conditions and outcomes by the proposed indicators was consistently high in relation to the opinion on the qualifications of their teachers, both from the students and their parents (legal representatives).

The respondents gave high scores (4 and 5 points) to the following indicators: the number of additional educational services at the school, the general image of the educational organization in the city (region), the provision of the school library with books, the availability of computers, office equipment, the Internet, and the preparation of graduates to continue their education at a next (higher) level. Low scores (3 or fewer points) were given to indicators that describe the material conditions of

learning and accommodation, employment opportunities for graduates in their degree field and salaries they can go after (Table 2).

Table 2. High scores given by the respondents to the criterion. "Learning conditions and outcomes".

Indicators	The number of respondents who expressed a high opinion, %							
	1st cross-section		2nd cross-section:		3rd cross-section		4th cross-section	
	students	parents	students	parents	students	parents	students	parents
The overall quality of teaching, qualification of faculty and masters of industrial work placement	88.4	86.8	90.05	87.0	87.9	97.8	95.45	95.02
The condition of study rooms and service rooms, sports facilities, student accommodation	76.9	87.0	78.3	87.09	67.8	83.7	78.01	78.44
Number of additional educational services for students	76.9	77.04	78.0	77.05	72.1	74.4	84.83	77.96
Organization of extra-curricular activities for students (study groups, interest groups, etc.)	77.03	40.7	78.0	41.0	68.3	70.4	84.14	77.48
Fellow students, their abilities, interest in learning	74.0	80.0	74.0	80.0	65.9	56.6	79.55	67.3
Access to computers, office equipment and the Internet	73.8	75.8	74.0	76.0	75.5	74.1	84.22	77.25
Availability of literature in the library	73.0	81.7	74.0	82.0	81.8	72.0	86.81	81.28
Quality of food in canteens, snack bars	73.7	83.89	74.0	84.0	64.4	61.5	77.9	77.01
Living conditions in the student accommodation	59.5	45.9	62.0	46.0	41.4	33.8	57.33	35.78
Preparation of graduates to continue their studies at a higher level (at a technical college or university)	81.9	79.0	82.0	79.0	80.0	77.9	90.0	84.36
Employment opportunities for graduates	82.03	78.0	82.05	78.09	67.5	59.0	85.53	74.64
Wage level of graduates	75.8	74.0	76.0	74.9	58.8	47.9	76.2	51.42

The relatively consistent assessments of the learning process by educational services consumers by the proposed criteria, showed that the educational organizations have a potential to develop towards innovation to meet the challenges of our time.

At the same time, the interim check of the suggested hypothesis showed that the existing resource provision of the educational space, including the level of faculty qualification, the technological characteristics of the learning process, etc., are actually the foundation for high-quality training of specialists for professional activities. This was also confirmed in the assessments by social partners, which were studied within the monitoring. Expert assessments in relation to the level of competence of graduates of VET institutions at the beginning and at the end of the monitoring of evaluation of educational activity by educational services consumers made it possible to distinguish three levels of professional competence of the graduates: basic, medium and high (Table 3).

Table 3. Distribution of graduates of VET institutions by level of career readiness.

Level of readiness	Expert assessments			
	1st cross-section	2nd cross-section	3rd cross-section	4th cross-section
	n = 670 %	n = 669 %	n = 630 %	n = 648 %
Sufficient	70	50.22	41.42	30.09
Above average	25.82	39.61	40	39.97
High	4.1	10.61	18.57	29.9

The revealed changes in the distribution of graduates in terms of career readiness based on the expert assessments showed positive trends towards improving the educational outcomes in the course of education. This fact suggests that a survey is a suitable method of studying subjective assessments of educational services consumers.

At the same time, the subjectivity of the survey as a research method required the inclusion of additional research tools in the system of assessing the innovation potential of VET institutions to increase its objectivity. Ranking of VET institutions was used as such a tool.

A number of quantitative indicators are used to assess each of the identified aspects of the VET institution that directly influence the quality of its educational services. When listing of the indicators under consideration, opinions were taken into account about the VET institution as a complex system

with the key function to train specialists for the regional economy. The potential of VET institution includes students, faculty and administrative and managerial personnel, infrastructure and facilities (learning spaces, machinery and equipment, library, budgetary funding, accommodation, public catering, etc.). At the same time, it is characterized by activities in the field of training future specialists.

The indicators used for ranking regional VET institutions are grouped structurally and functionally in accordance with the above systemic concepts. They include both data on the organization's potential (groups "financial and economic provision", "human resources", "infrastructure"), and performance data, i. e, the organization's activities. Those groups are: "educational activities", "activities in the labor market", "development of the potential".

The network of VET institutions in the Kemerovo Oblast is rather heterogeneous and includes educational organizations in rural areas, which for objective reasons cannot innovate as intensively as large educational organizations. For this reason, the "development of the organization's potential" aspect had a relatively low weight ratio based on the results of the expert assessment, despite the obvious importance of the innovation-driven development of the system of secondary vocational education in the region. Thus, the created rating is in line with the principle of democracy and ensures equal conditions for regional VET institutions when assessing the quality of their educational services.

Thus, the total score of the VET institution is a number of points between 0 and 10, where 0 means that the indicators under study have minimum values for a school (and the indicators 1.3 and 2.3 respectively have maximum values) among the schools included in the rating, and 10 means that the indicators under study have the maximum values for a school (and the indicators 1.3 and 2.3, respectively have the minimum values) among the schools included in the rating. The ranking

involved listing Kemerovo Oblast VET institutions by the total score in the descending order, the top position being the highest position in the rating.

The main purpose and volume of this paper do not imply any detailed report on the analysis or calculations for all the Kemerovo region VET institutions. Instead, this paper presents the outcome of applying the created system for assessing the innovation potential of VET institutions as exemplified by assessing the innovation potential of VET institutions that train specialists for the coal mining industry of the Kemerovo Oblast. For each of them, 1) the comprehensive assessment of innovation potential was calculated based on the survey; 2) the vocational education quality index was calculated by ranking; 3) the comprehensive index of the innovation potential of VET institutions was calculated (Table 4).

Table 4. Comprehensive indexes for assessing the innovation potential of VET institutions

Indicators	VET institution		
	Kemerovo Mining Technical College	Leninsk-Kuznetskiy Mining Technical College	Prokopyevsk Mining Technical College
Evaluation index of innovation potential based on the survey	3.9	3.8	3.6
Vocational education quality index based on the ranking	4.6	3.2	3.2
Comprehensive index of the innovation potential of VET institutions	4.3	3.5	3.4

Discussion.

The study of objective and subjective assessments of the innovation potential of VET institutions and the need to build career readiness on that basis required the development of further prospective activities for the development of the innovation potential of schools with a focus on the pedagogical aspect of the process.

The findings from the analytical studies of the practice of vocational education and their comparison with the findings from this study showed that the following areas for the development of innovation potential of VET institutions are becoming promising ones:

- Creating a learning space at the educational institution, taking into account the continuity and interrelation of all levels of vocational training;
- The type of the learning process organization that includes the interrelation of innovative and traditional forms;
- Implementing a person-oriented educational paradigm, which contents are aimed at the integral human development, development of the future specialist as a carrier not only of special knowledge, but also of universal, professional and extra-professional values.

The principle of continuity and interrelation of all levels of vocational training in the learning space of the educational institution necessitates moving to multi-level training models, intensifying the processes of rapprochement, integration of levels of primary and secondary vocational education into unified educational complexes that work according to coordinated curricula and programs.

The goal of the study has been accomplished. At the initial stages of the study of the innovation potential of VET institutions and its impact on the quality of training, the hypothesis was put forward that the optimal method of interlinking the innovation potential of an educational organization, the career readiness of graduates and the external conditions for the regional vocational education system is integration as a multi-aspect process (Kostyuk, 2012). With respect to the definitions presented, the most important aspects of integration processes for the development of the innovation potential of VET institutions are the organizational and content-related aspects.

In this context, integration is more than just cooperation, it implies merging into a united pedagogical system. In the process of integration in vocational education, the pedagogical goals and objectives of the educational institution should be taken into account. They determine the type, mechanism and

structure of pedagogical integration, which will result in a more effective accomplishment of a complex of specific goals: to ensure the integrity of understandings, unification of methodology and priority areas of the learning process. The integrated unity should manifest new integrative qualities, which are determined by the goals and objectives of the learning process and the development of social and cultural processes in the community.

Integrative qualities of the totality should be shaped through interpenetration and mutual transformation of the integrating elements to their benefit, while preserving the properties and specific features of its components. In vocational education, the integrated modular approach becomes the foundation for vocational training of qualified specialists that are in demand in the labor market.

Among existing models of integration of education, there are models with a pronounced focus on improving the quality of knowledge. This idea does not have a pedagogic aspect, so it cannot become the key idea of modern vocational education. The most efficient integration mechanism is deemed the mechanism based on developing of unified approaches to the mandatory delivery of common value orientations, which are mainly the values associated with the developing worldview of young people. That is, to attain the desired learning outcomes, it is not sufficient just to organize the integration of educational institutions and create relevant programs of a new type that would meet modern requirements for the quality and contents of vocational education. It is required also to focus on the faculty who fulfill these requirements in their work (Panina & Dochkin, 2018). The prospective problems, the findings from this study began to explore and address, are the problems of 1) the integration of training skilled workers to the new system of vocational education in Russia (Tkachenko, 2017) and 2) determination of potential and role of higher education institutions in training specialists for "one-company towns" (Pakhomova & Prosekov, 2018), which have social, economic and production conditions that require expansion of the list of professional competencies.

To organize the learning process that would include the interrelationship of traditions and innovations and aim at building career/innovation readiness, in accordance with the purpose of the research, a number of principles were distinguished and conventionally designated as the basic (i. e. the most significant for both building career readiness and for the faculty, which are the subjects of this process).

In modern science, principles are defined as basic assumptions, guiding ideas, basic rules of behavior/action. Such basic principles of the learning process organization include (in the context of the problem being addressed):

- Comprehensiveness and consistency;
- Additionality and variability;
- Sphericity.

The implementation of the principle of comprehensiveness and consistency in building career readiness of future graduates based on the innovation potential of the VET institution requires

- Integration of theoretical and practical development of career readiness;
- Promotion of personal activism;
- Upgrading of self-education skills.

The principle of additionality and variability is a leading one in adjusting the contents of training to the requirements of the labor market, professional requirements and students' individual abilities. The principle of additionality implies adding the design opportunities to the main education route. The implementation of the principle of variability in building innovation readiness makes it possible to take into account the heterogeneity and mobility of the unified educational space, the possibility of adjusting the education route to the social and economic context in the region and country.

The organizational principle of the sphericity is determined by the essence of the process of building career readiness with its component structure, step-structure and concentricity. Its implementation in the context of the purpose of the study ensures the integration of the aspects of this process with the areas of the learner's individuality spheres: intellectual, motivational, emotional, volition, practical, self-regulation.

CONCLUSIONS.

The key scientific and practical outcomes of this study were:

- The concept developed, implemented and tested, which is based on the idea of the need for interaction between the labor market and vocational education, with the inclusion of the "qualified specialist" key component in the "economy — labor market — vocational education" system;
- The system developed and the procedure optimized of monitoring the satisfaction of educational services consumers with the conditions and outcomes of vocational education at regional educational organizations;
- The method of ranking regional VET institutions for their comprehensive assessment tested;
- The prospective development areas identified for organization of the learning process, which allow to register, diagnose and evaluate the educational, professional and personal development of students as future specialists in the context of the person-oriented paradigm of vocational education.

In addition, the study confirmed that the process of building career readiness of graduates should ensure:

- Taking into account individual characteristics, personal goals and stage of development of students in the course of their vocational (theoretical and practical) training and in the course of planning and adjusting the graduate's professional route after graduation;
- The individual educational path, determined on the basis of specific features of personality, social conditions of the learning situation and the demand for the quality of professional training.

BIBLIOGRAPHIC REFERENCES.

1. Blinov, V. I. (2006). Natsional'naya ramka kvalifikatsii i kachestvo professional'nogo obrazovaniya [National Qualifications Framework and Quality of Vocational Education]. Vestnik Tomskogo gosudarstvennogo pedagogicheskogo universiteta [Tomsk State Pedagogical University Review], 10(61), 10–13 (in Russian).
2. Gorshkov, M. K., & Sheregi, F. E. (2010). Youth of Russia: sociological portrait. Moskva: CSEM, 196-201.
3. Dezhkam, B. (2017). Investigating Performance of Plastic Hinge in Steel Frames by Knee Bracing. International Electronic Journal of Mathematics Education, 12(3), 431-445.
4. Dochkin, S. A., Kostyuk, N. V., & Panina, T. S (2012). Innovative Infrastructure of the Region in the Field of Education — the State and Development Prospects. Kemerovo, Kuzbass Regional Institute of Development of Vocational Education Publ, 75. (in Russian).
5. Kostyuk, N. V. (2016). Research Methods in Vocational Education: Organizational, Pedagogical and Marketing Aspects. Kemerovo, Kemerovo State Institute of Culture Publ., 92 p. (in Russian).
6. Kostyuk, N. V. (2013). Teaching of Innovative Activity for Graduates of Educational Professional Institutions. Doctoral dissertation. Federal State Budgetary Educational Institution of Higher Education, 1 (in Russian).
7. Kostyuk, N. V. (2013). Teaching of Innovative Activity for Graduates of Educational Professional Institutions. Doctoral dissertation. Federal State Budgetary Educational Institution of Higher Education, 2 (in Russian).
8. Kostyuk, N. V. (2012). The Sixth Semester for Strategic Partners. Professional education. Capital, 11, 38 — 40 (in Russian).

9. Kostyuk, N. V., & Falomkin, A. V. (2011). Development of Effective Interaction of the Vocational Education System and the Labor Market in the Conditions of the Industrialized Area. Kuzbass regional institute of Development of Vocational Training Publ., 120. (in Russian).
10. Kutetsina, T. G., & Reprintseva, E. G. (2006). The Career of a Graduate of Primary Vocational Education Institution. Supply and Demand in the Labor Market and the Market of Educational Services in Russian Regions. Proceedings of the 2nd All-Russian Scientific Conference, 1, 19–38 (in Russian).
11. Kyazimov, K. G. (2017). Technology of Attaining Professional Competence by Young Professionals. Work and Social Relations, 8, 6 (in Russian).
12. Panina, T. S. (2010). Proactive Work. Accreditation in Education, 2(37), 82–83 (in Russian).
13. Panina, T. S., & Dochkin, S. A. (2014). Specific Features of Diversification of Interaction between the University and Regional Enterprises and Organizations. Professional Education in Russia and Abroad, 4(16), 21–27 (in Russian).
14. Panina, T. S., & Kostyuk, N. V. (2014). Satisfaction with Studying at College and University. Accreditation in Education, 8(76), 82–84 (in Russian).
15. Panina, T. S., Pavelyeva, N. V., & Dochkin, S. A. (2010). A New Model of Vocational Education for the Innovative Economy. Professional education. Capital, 1, 37–39 (in Russian).
16. Panina, T. S., Filipyeva, S. V., & Pastor, N. G. (2008). Ranking of General Education of Students at Vocational Education Institutions. Kuzbass regional institute of Development of Vocational Training Publ, 67. (in Russian).
17. Panina, T. S., & Dochkin, S. A. (2018). Supplementary Vocational Education as a Factor of Competitiveness Higher Education Institution. Professional education. Capital, 3, 12–17 (in Russian).

18. Pakhomova, E. A. (2015). Development of a Regional System for Assessing the Quality of Secondary Vocational Education. Theory and Practice of Assessing the Quality of Vocational Education. Kemerovo, GBU DPO KIRPO Publ, 138–185 (in Russian).
19. Pakhomova, E. A. (2016). Comprehensive Assessment of the Quality of Vocational Education as a Factor in Stimulating Professional Students' Self-Determination. The New in Psychological and Pedagogical Research, 2, 60–65 (in Russian).
20. Pakhomova, E. A. (2017). Formation of a Territorial Multi-Level System of Pedagogical Support for Students' Professional Self-Determination. Doctoral dissertation. Federal State Budgetary Educational Institution of Higher Education, (in Russian).
21. Pakhomova, E. A, & Prosekov, A. Yu. (2018). The Role of Universities in the Development of New Competencies for One-Company Towns. Professional education. Capital, 3, 3–8 (in Russian).
22. Smirnov, I. P. (2006). The Theory of Vocational Education. Moscow, 320. (in Russian).
23. Strategy for Innovative Development of the Russian Federation until 2020. http://www.garant.ru/products/ipo/prime/doc/70006124/. Accessed: 2 April 2018 (in Russian).
24. Tkachenko, E. V. (2017). Training of Labor Force in the Conditions of the Abolition of the System of Primary Vocational Education. — Ed. by Tkachenko E. V., Galaguzova M. A. Conceptual Framework of Pedagogy and Education. Ekaterinburg, Ural State Pedagogical University Publ, 160–172 (in Russian).
25. Tkachenko, E. V. (2012). Comparative All-Russian Sociological Research (2000 and 2010). Where does the younger generation go in the 21st century? Engineering and pedagogical human resources: challenges of our time. Professional Education in Russia and Abroad, 3(7), 77–85 (in Russian).

BIBLIOGRAPHY.

1. Kostyuk N. V. Integration Processes in Vocational Education in the Conditions of Social and Economic Development of Modern Russia. The World of Education — Education in the World. 3(47), 39–47 (in Russian).

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