

Formation of Functional Competencies of University Students



Lesia Savchenko, Olena Goncharova, Inna Zaytseva, Liudmyla Polishchuk, Oksana Alieko, Yuliia Kakhiani

Abstract: *The universal technology of work with the formation of functional competencies of future professionals is described.*

The authors proposed methodology for the formation of functional competencies of university students, which consists of Functional card and Integrative model (model for improving the quality of education: block "management of the development of competencies of specialists in the system of continuing education"; block "certification and accreditation of specialists on the basis of the Institute of Postgraduate Education as a quality management center for continuing professional education"; block "Integration of the scientific potential of the university and the practical base as a factor in improving the training of specialists") is due to the principles of consistency and constructive integrity.

For clarity, the authors presented examples of two functional maps: consolidated group and summary functional card compared to the reference.

Keywords : *Competency, Functional Competencies, Students, University.*

I. INTRODUCTION

The education system, as a specific social system has many features and components, the number of which, like the positioning between them, is inconsistent and varies depending on environmental conditions [1-3].

A competency-based approach in education implies that the result of mastering the main educational program in a higher education institution should be, to one degree or another, formed competencies, understood as the ability to apply knowledge, skills and personal qualities in accordance with the tasks of professional activity – a modern personnel training system should provide a graduate,

which does not have the potential to be able to solve problems, but has already shown in the process of internships, internships, the implementation of practical tasks and work a certain level of competencies formed in him [4-11].

Functional competencies in this article are the knowledge, skills and abilities that are necessary for the implementation of the functions of professional activity. Ator's methodology offers 4 main competencies: qualifications, the competitiveness of graduates in the labour market, competencies, networking, which affect the formation of functional (professional) competencies of students.

II. METHODOLOGY

Let's consider in more detail all these 4 competencies:

1. Qualification. To assess this competence, a "Functional Qualification Card" is proposed (Table 1.). It reflects the main areas of activity of the HR manager and outlines the technologies and techniques that a student should possess as a qualified specialist after graduation.

Revised Manuscript Received on December 30, 2019.

* Correspondence Author

Lesia Savchenko*, Department of Public-Law Disciplines, Kyiv International University, Kyiv, Ukraine

Olena Goncharova, Department of Museology and Expertise of Historical and Cultural Values, Kyiv National University of Culture and Arts, Kyiv, Ukraine

Inna Zaytseva, Department of Journalism, Ukrainian Literature and Culture, University of the State Fiscal Service of Ukraine, Irpin, Kyiv region, Ukraine

Liudmyla Polishchuk, Event Management and Leisure Industry Department, Kyiv National University of Culture and Art, Kyiv, Ukraine

Oksana Alieko, Department of Preschool Education and Social Work, Donbas State Pedagogical University, Slavyansk, Ukraine

Yuliia Kakhiani, Department of Preschool Education and Social Work, Donbas State Pedagogical University, Slavyansk, Ukraine

© The Authors. Published by Blue Eyes Intelligence Engineering and Sciences Publication (BEIESP). This is an [open access](https://creativecommons.org/licenses/by-nc-nd/4.0/) article under the CC-BY-NC-ND license <http://creativecommons.org/licenses/by-nc-nd/4.0/>

Table- I: Functional Qualification Card

Field of activity	Technologies, techniques	Theoretical knowledge	Practical skills
HR planning	1. Staff planning. Staffing: categories, qualifications, quantification - analysis of the emergence of vacancies. 2. Description of work and requirements for candidates; drawing up a profile of the candidate. 3. Sources of staff involvement; job fair as work with recruiting agencies: choosing a company, competent preparation of an application for the selection of a specialist, coordination of the terms of the contract. 4. Executive Search, headhunting, outsourcing, staff leasing. 5. Selection of candidates: - analysis of the resume; - interview. 6. Initial selection: resume, telephone conversation. 7. Personal interview: appearance, experience, competencies, motivation, expectations. Tests and their use in the selection. 8. Decision-making based on interview results and feedback. 9. Refusal to the candidate	1. 2. 3. 4. 5. 6. 7. 8. 9.	1. 2. 3. 4. 5. 6. 7. 8. 9.
Adaptation	1. Maintaining an organization. 2. Introduction to the unit. 3. Introduction to the position. 4. Mentoring. 5. The study of regulatory documents on the adaptation of personnel (provisions on adaptation, adaptation programs, etc.)	1. 2. 3. 4. 5.	1. 2. 3. 4. 5.
Organization of labour	1. The structure of the organization. 2. Powers and their hierarchy. 3. Staff card. 4. Description of the workplace. 5. The format of the job description. 6. Working conditions. 7. The balance of working hours. 8. Diagnostics of working hours (timekeeping). 9. The cost of staff. Determination of economic damage caused by staff turnover	1. 2. 3. 4. 5. 6. 7. 8. 9.	1. 2. 3. 4. 5. 6. 7. 8. 9.
Motivation and stimulation	1. Motivational profile. 2. Economic incentives: - remuneration of workers, specialists and managers (tariff, non-tariff, official salaries, commission systems or sales promotion systems); - analysis of individual incentive systems; - systems of privileges and privileges; - the contents of the competency package of managers. 3. The applied methods of non-material motivation. 4. Disciplinary methods of stimulation. 5. Ways to determine the optimal value of wages. Compensation package. Bonuses and benefits. Bonus Principles. Features of material incentives for "workers" specialties, administrative staff, sales managers, top managers. Effective ways of non-material motivation. The formation of staff loyalty to the organization.	1. 2. 3. 4. 5.	1. 2. 3. 4. 5.
Personel assessment	1. Types of assessment activities: certification, personnel audit, Assessment centre and how to conduct them. 2. Organization of personnel assessment in the company, optimal frequency and methods of its implementation. 3. Certification: - study of regulatory and methodological documents of managers and specialists; - the composition of the certification commission, the organization of its work; - the composition of indicators and areas of certification of employees; - documents (attestation sheet, etc.); - the use of certification results when filling vacant posts, forming a reserve of personnel for a nomination, etc.	1. 2. 3.	1. 2. 3.
Business career management	1. Rotation of personnel (career horizontally) as an element of a business career management system. 2. The system of planning personnel reserve. Methods of managing professional career advancement of staff.	1. 2.	1. 2.
Staff development	1. Vocational education, training, retraining. 2. Further training, professional excellence. 3. Educational programs. 4. Technology training. 5. Organizational and methodological documents (decisions, regulations, orders, etc.). 6. Staff training budget	1. 2. 3. 4. 5. 6.	1. 2. 3. 4. 5. 6.
Formation and maintenance of organizational culture	1. Management style (according to Levin, Blake). 2. Profile of organizational culture. Strengths and weaknesses of organizational culture in focusing on the goal of the organization or the problem being solved. Building an ideal culture profile in custom orientation (with justification). 3. Applied tools for working with organizational culture. Their adequacy to order and ideal culture profile. 4. The corporate standard of the organization. Organization mission Organizational values, rites, rituals, legends and myths, customs, norms. 5. Pros and cons of corporate "holidays". 6. Intercompany PR	1. 2. 3. 4. 5. 6.	1. 2. 3. 4. 5. 6.
Labour regulation	The study of: - existing public organizations, their goals and objectives; - the work of governing bodies responsible for contacts with public organizations; - the content of the collective labour contract; - the practice of resolving labour disputes; - ensuring labour protection and safe life of workers	1. 2. 3. 4. 5.	1. 2. 3. 4. 5.

2. Competitiveness of graduates in the labour market. The demands placed on organizations by today's graduates are high, but students can often observe exaggerated demands on their future jobs. In order to show the real requirements for graduates from the employer, an objective picture is needed. It should be remembered that the labour market is dynamic, it is influenced by many factors; therefore, analysis (monitoring) of the labour market should not be a one-time but a regular action that must be carried out at least once a year. Students, together with the teacher, study the ratings of leading companies. Students also master the labour market with the so-called "field" move - in the process of internships and practices. The ability to monitor the labour market, instinct for its changes and dynamics are among the most important professional competencies of the HR manager.

3. Competencies. The competencies that students must master in the process of studying at the university are prescribed in the work programs for each discipline.

One of the urgent tasks is the breeding of the concepts of "qualification" and "competence"; it is necessary to establish the points of intersection and the vectors of differences.

4. Networking. Capitalization is important as a "measure" of mastered competencies. Capitalization can be financial, reputational and social, which at the present time is understood as the establishment of a variety of contacts (the so-called networking – "the art of creating connections"). Students establish business contacts during internships, internships, and it is also important that these social connections contribute to the formation of a professional HR community in each region.

In order for the work with these directions in all 4 directions to be holistic, an individual plan is used.

In many organizations, an individual plan today is perhaps the main tool for working with staff; the development of professional competencies of personnel is also carried out with its help.

To master the competencies of working with individual plans, understanding the features of their preparation, developing their content, students also work with their own individual development plan, using it in their educational activities. In individual plans, students mark their resources ("strengths" and "weaknesses"), give self-diagnosis results, set goals and objectives for the coming year.

Reliance on the principle of reasonable sufficiency allows us to distinguish the following set of components of an integrative model for improving the quality of education and the formation of functional competencies of students:

- block "Management of the development of competencies of specialists in the continuing education system";
- block "Certification and accreditation of specialists on the basis of the Institute of Postgraduate Education as a quality management centre for continuing professional education";
- block "Integration of the scientific potential of the university and the practical base as a factor in improving the training of specialists".

Thus, the proposed methodology (Fig. 1) for the formation of the functional competencies of university students looks like:

1. Functional card
2. Integrative model .

An integrative model to improve the quality of university education involves assessing the competencies of specialists with subsequent adoption of personnel and organizational decisions; definition of incentive and incentive measures. The object of competency assessment is a specialist (student) of the university. The subjects of the competency assessment process are the created expert commissions at universities, as well as certification commissions that assess the level of professional qualifications. The commission at universities may include the head of the unit and experts who ex officio interact with the specialist, representatives of the trade union body, and professional associations. The commission should ensure maximum objectivity of the data when evaluating a specialist. Based on the commission data, and analysis of the results of the personnel assessment by the heads of divisions is carried out, the results are clarified together with the personnel department, the project managers prepare personnel decisions for the division, then discussion and approval by the head of personnel decisions in the organization.

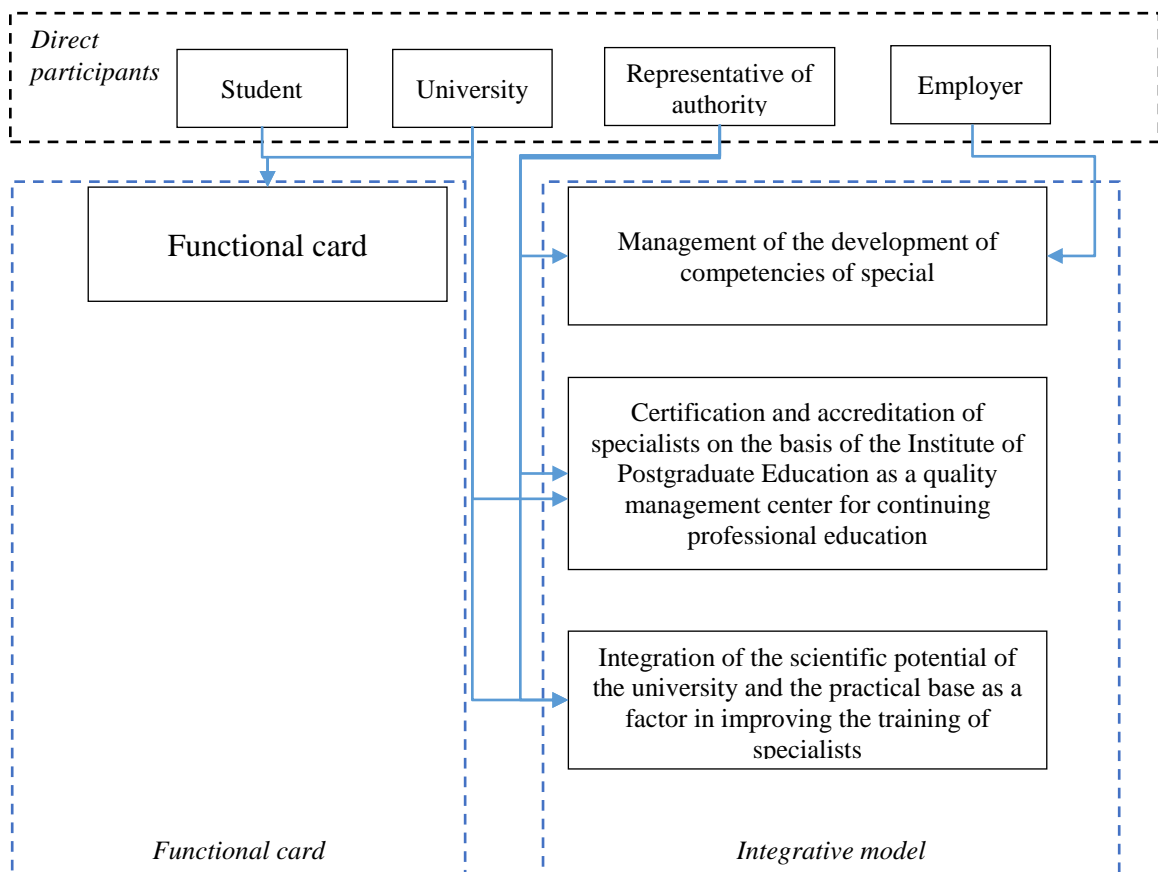


Fig. 1. The proposed methodology for the formation of functional competencies of university students

The decision is communicated to the employee by the heads of departments. In case of disagreement of the employee with the results of the assessment, he has the opportunity to appeal or appeal to an independent expert commission, the creation of which will be required to resolve

conflict situations.

The evaluation procedure of specialists is supposed to be carried out:

- at universities of I and II levels on a voluntary basis;
- at level III universities of vocational-technical schools and with a primary job placement without fail.

A prerequisite for the implementation of assessment procedures is the development for universities of I and II levels of personalized incentive systems (bonuses, grants, etc.) for the mandatory passage of experts of the assessment procedure. All students undergo an assessment procedure once a year at the reporting date, and more often if necessary.

University graduates also go through the assessment of acquired competencies, the results of which are an appendix to the diploma of vocational education and serve as a starting point in the individual development plan of a specialist. Subsequently, when conducting an annual assessment of the competencies of specialists, the achieved results of the assessment can be taken into account cumulatively for certification and accreditation. After the introduction of a system for assessing the competencies of specialists, the procedure for its implementation can be adjusted. The main and decisive factor in assessing competencies is the competency map. This article proposes its approximate model, formed in three sections, nine directions and five levels on the basis of the Bologna education system, draft professional standards and the development of literary sources on international experience in applying maps and personnel assessment methods. The competency map consists of:

- from the section "Professional Competencies (Qualifications)", which includes knowledge, skills, abilities, qualification characteristics;
- the section "Basic competencies", which includes work with information, communicativeness, diligence, work with documentation, decision-making ability, responsibility, organizational skills;
- the section "Socio-psychological competencies", which includes ethics, behaviour, including a healthy lifestyle, tolerance, the desire for self-development.

The results of the assessment are discussed by the specialist and manager, the employer in the form of a dialogue to draw up an individual plan for the development of specialist competencies. The results of assessing the competencies of specialists can be used in the formation and adoption of managerial decisions: taking measures to increase the motivation of a specialist to ensure career and professional growth; determination of the necessary development priorities of the organization.

The project implementation management system should be based on the principles of joint participation of representatives of state authorities, parties to social partnership, openness in making managerial decisions. The process of managing the development of competencies should include the process of assessing the competencies of specialists and the process of making managerial decisions on their development. Assessment of the competencies of specialists is carried out using a competency map, which includes three sections. The first section is the assessment of professional qualities, taking into account the results of the professional certification of specialists. Two other sections of the competency map, namely basic and socio-psychological competencies, are proposed to be evaluated by a special commission of the organization. Today, we are dealing with a

similar practice of describing the personal qualities of a specialist in obtaining characteristics in the personnel service. However, we often encounter a biased or formal approach when providing characteristics for nominating candidates for the formation of a personnel reserve, for rewarding, for participating in professional contests, when changing jobs. As a result of the assessment and filling out the competency map, an "individual specialist profile" is formed (see Fig. 1), depicted in the form of a diagram. The chart values are compared with indicative indicators of the speciality profile.

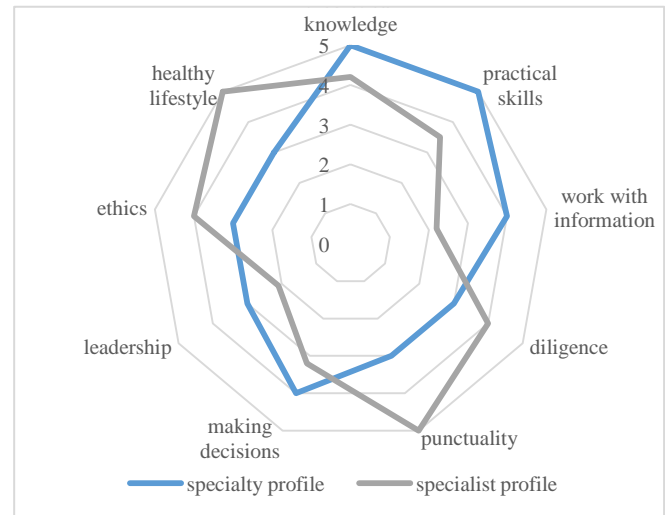


Fig. 2. Example of an individual specialist profile

The results obtained are analyzed to develop an individual specialist development plan and formulate proposals for making management decisions. The process of developing an individual plan for the development of a specialist should have a dialogue character of interaction between a specialist and an employer.

The next step in the process of managing the development of specialist competencies is the process of making a managerial decision, which, on the one hand, involves informed discussion and the formation of an order for training and raising the competencies of specialists; the formation of a database of competencies of specialists, measures to stimulate labor (use of a map of competencies of specialists as an application to an effective contract), on the other hand, the planning and implementation of measures for the effective development of the organization (changing the structure of the organization, bed capacity, staffing, etc.) ; on the introduction of new technologies provided by trained personnel; on the formation of a personnel reserve.

In the process of implementing the model, it is necessary to carefully consider the overall strategy for conducting events, taking into account the occurrence of possible risks. It is necessary to carry out the process (implement measures) in such a way as to prevent the occurrence of unintended risks and minimize their impact on the results of work. Model implementation activities are presented in the "functional map" (Table 2) qualified specialist after graduation.

An analysis of the proposed “Integrative model for improving the quality of education at the postgraduate stage” and the “Functional map” of its implementation shows that the model has signs of self-regulation, which is manifested in the possibility of the person responsible for the implementation of a particular event or group of activities to promptly adjust the requirements for the content of blocks in response to the changing conditions of the external and internal environment of the medical organization in accordance with new priorities. At the same time, there is no need to radically change the fundamental structure of the model, which ensures the preservation of a stable environment and helps maintain a favourable climate in the organizations of the education system.

The implementation of the model in the education system allows counting on the presence of positive shifts in each of the priority areas for improving the quality of university education. Management of the development of competencies of specialists in the system of continuing education of specialists can contribute to the formation of a personnel reserve of the system at its various levels (from regional to institutional); formation of a rating of specialists, a rating of universities; the formation of an individual specialist development plan; providing specialists with the appropriate level of competence for the use of modern equipment; the formation of an order for continuous training of specialists in accordance with the plans for the development of industries.

Table- II: Functional map

Event	Responsible	Results
1. Management of the development of competencies of specialists		
Deciding on the implementation of the model	Executive authority in the field of education	Order, decree
Designation of participants in the competency assessment process, indicating their role and place in the designated process	Executive authority in the field of education	Order (technique)
Determining the interests of the subject of evaluation	Executive authority in the field of education	Order (criteria and criteria values of the assessment)
Formation of the rules of work with the certification commission, professional community, an independent expert group for assessment	Executive authority in the field of education	Order (interaction regulations)
2. Description of the mechanism for assessing competencies and their development		
Deciding on an assessment in the region	Executive authority in the field of education	Order
Coordination of the decision on the assessment with the representative body of workers (trade union organization)	Head of an educational organization	The motivated opinion of the trade union organization
Estimation schedule	Head of an educational organization	Organization order (schedule)
Calculation of the expected financial costs of the assessment	Head of an educational organization	Organization order
3. Determining the format and content of the competency map based on professional standards, assessing the competencies of specialists		
Carrying out the procurement procedure for the development of a competency map and its testing	Executive authority in the field of education	Technical task, Government contract, Competency Map
Assessment and formation of specialist profiles	Head of an educational organization	Specialist chart
Finalization of a software product for maintaining a register of employees regarding the formation of a competency map	Executive authority in the field of education, Head of an educational organization	Creating a registry of specialists
4. Formation of proposals for the application of the results of the assessment of specialist competencies		
Analysis of the assessment results (analysis of specialist profiles)	Head of an educational organization	Analytical information
Development of an individual employee development plan	Head of an educational organization	Individual employee development plan
Ordering a healthcare organization for employee training (competency development)	Head of an educational organization	Application for training
The plan of the organization of health care to improve the effectiveness of the organization (changing the bed capacity, staffing, organization structure, etc.)	Executive authority in the field of education	Changes in the educational development program (specific speciality)
Plan for the formation of personnel reserve	Executive authority in the field of education, Head of an educational organization	Personnel reserve lists
Development of regulation on employee incentives	Head of an educational organization	Addition to an employment contract
Using the results of the assessment when conducting activities to control the quality and safety of professional activities	Head of an educational organization	Improving the quality of specialists
Amendments to the regulations of the processes of the quality management system	Head of an educational organization	Order (changes and additions to the quality management system)

Certification and accreditation of specialists at the Institute of Postgraduate Education as a center for quality management of continuing professional education will lead to the creation of conditions for the training of specialists in accordance with the approved procedures and standards; improving the system of selection of specialists when hiring, taking into account the level of knowledge and competencies; the formation of a business plan for the development of universities, taking into account the introduction of new technologies. Integration of the scientific potential of the university and the practical base as a factor in improving the training of specialists will lead to a rational and efficient use of the financial resources of the subject for personnel training; reducing the imbalance of human resources and, as a result, improving the quality of services and goods produced in all sectors.

III. RESULT AND DISCUSSION

In order to test the "Integrative model for improving the quality of education" and the "Functional map" for its implementation, we organized an expert assessment of the proposed activities. Experts from among specialists, including scientists, representatives of the professional community with experience in improving the quality of university education, were invited to evaluate the proposed activities in terms of logic (adequate correlation of the presented problem and the presented methods for its resolution), completeness (degree of adequacy of the presented complex measures to resolve the problem), relevance (to what extent the proposed methods reflect the real situation), practicality (possibilities to use tions activities in practice), the viability (efficiency ratio of attracted resources).

A comprehensive analysis of the "Integrative Model for Improving the Quality of Education" according to the criteria of "Logic", "Completeness", "Relevance", "Practicality", "Prospectivity" allows us to conclude that these criteria are reflected in specific activities, and their implementation will improve the efficiency "Integrative model for improving the quality of education for organizations of the education system (Fig. 3). The implementation of the formulated proposals into practice will allow us to achieve the expected result from the implementation of the "Integrative model for improving the quality of education".

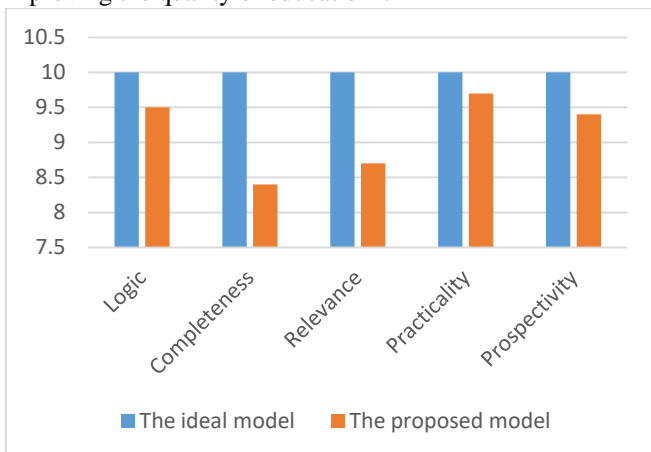


Fig. 3. The results of a comprehensive analysis of the model

The expert analysis of the "Integrative model for improving the quality of education" and the "Functional map" of its implementation as a whole indicates a high level of universality of the actions contained in the model. At the same time, a number of recommendations should be formulated for each section.

The fundamental need for a three-tier system of a model for improving the quality of education: block "managing the development of competencies of specialists in the system of continuing education" block "certification and accreditation of specialists on the basis of the Institute of Postgraduate Education as a quality management center for continuing professional education"; block "Integration of the scientific potential of the university and the practical base as a factor in improving the training of specialists" is due to the principles of consistency and constructive integrity. Failure in the implementation of the model from any block may lead to a distortion of the final results and cast doubt on the effectiveness of all work to improve the quality of medical education at the postgraduate stage.

In view of the principle of voluntary participation in the assessment procedures of university staff at levels, I and II declared by the integrative model, the leaders of these organizations with the participation of representatives of the professional community should develop personalized incentive systems for participation in these procedures. Differentiation of incentive systems can be carried out both in accordance with external social characteristics (speciality, work experience, level of wages, career claims, desire for public recognition, etc.) and in accordance with the types of labour motivation.

When conducting a periodic assessment of competencies, it is important to ensure the possibility of a comparative analysis of the results of the current assessment of a particular specialist, both "with yourself in previous periods" and with the results of other specialists (averaged and personified) holding similar positions (Fig. 4). Following this rule, on the one hand, will ensure the openness of assessment procedures and increase the public confidence in them, and on the other hand, it will stimulate future professionals to increase the effectiveness of professional activities that directly affect the success of the next assessment of competencies.

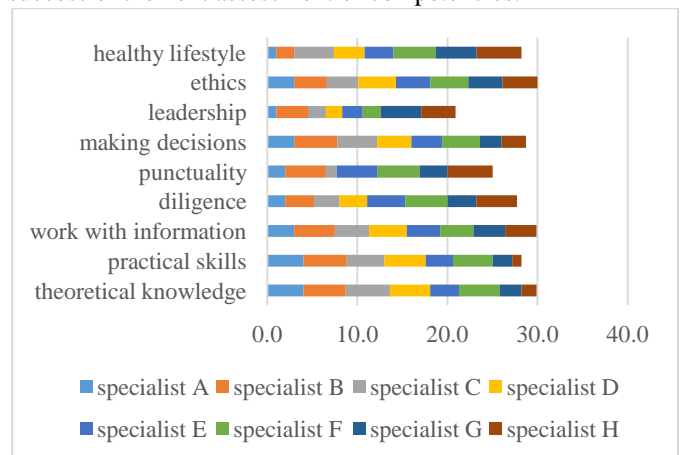


Fig. 4. Consolidated functional map (for example, a group of students)

In order to overcome risk events throughout the list of events of the integrative model, it is recommended that before making a decision about its launch by the group of authors (the project team) develop change management plans, a risk and opportunity management plan. Change management in the "Integrative model for improving the quality of education" and the "Functional map" for its implementation includes identifying, formalizing, classifying, evaluating, accepting or rejecting, verifying compliance with the basic provisions of the "Integrative model for improving the quality of education" and the "Functional map" for its implementation. Risk and opportunity management includes identification and assessment of risks (opportunities); drawing up a plan for responding to risks and opportunities, its approval, and after -

notification of it to all interested parties; updating the general "Integrative model for improving the quality of education" and the "Functional map" for its implementation in accordance with the approved plan for responding to risks and opportunities; assessment of the probability of completing tasks in time and cost in order to apply the most relevant tactics of risk and opportunity management. accordance with the plans for the development of industries.

A consolidated functional map (Fig. 5) allows you to visually see which categories need to be improved. Such a visual representation of the card allows the employer to make the final decision himself because the industry average values are chosen as the standard. And to the employer, perhaps, maintaining a healthy lifestyle is more important than punctuality.

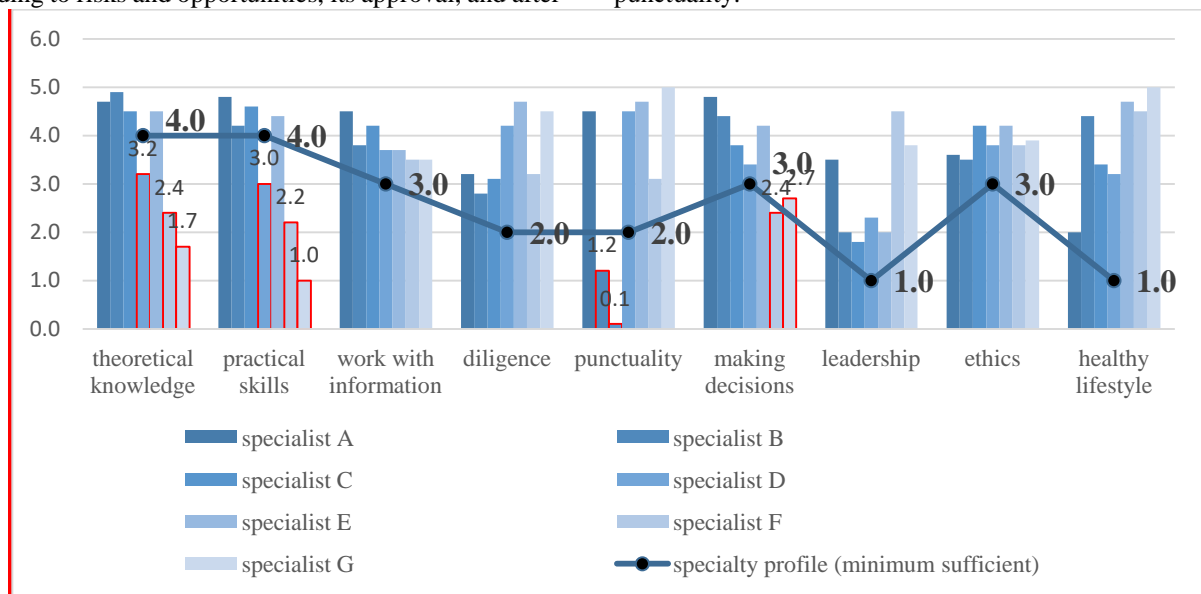


Fig. 5. Summary functional card compared to the reference

In order to ensure the timely implementation of the model activities (the "functional map" of the integrative model) for organizing methodological support for the implementation of the described model, it is advisable to organize a project office, an "Integrative Model for improving the quality of education" and a "Functional Map" for its implementation. A project office can be organized both in the physical sense (a specially created department or endowing such functions with an existing unit), and in a virtual state (a temporary working group of model authors, combined into a group based on the decision of the leaders). The task of the project office of the "Integrative Model for Improving the Quality of Education" and the "Functional Card" for its implementation will be to support the implementation of an integrative model at different levels of health system management through the introduction of a unified methodology, standards, procedures and templates, consulting and administrative support for decision-makers at various levels, coordination the implementation of an integrative model in various municipalities, the preparation of analytical and generalized reporting at the request of interested Torons different levels.

IV. CONCLUSION

Consideration of recommendations for testing and implementing an integrative model for improving the quality of education: a three-link system of a model for improving quality as a condition for consistency and constructive integrity; development in accordance with external social characteristics and types of labor motivation of personalized systems to stimulate the participation of specialists in assessment procedures; ensuring openness of valuation procedures and a high public degree of trust in them; implementation of the integrative model in accordance with the main provisions (change management, risk and opportunity management, project office) will improve the testing of the integrative model at universities and ensure high quality education.

REFERENCES

1. Prokopenko, O., Holmberg, R., Omelyanenko, V., Information and communication technologies support for the participation of universities in innovation networks (comparative study), Innovative Marketing, 2018, 14(3), pp. 17-29

Formation of Functional Competencies of University Students

2. Zuzana Štofková, Jacek Piotr Binda, Jacek Piotr Binda, Jana Štofková, Managerial competencies of university students, Conference: 12th International Technology, Education and Development Conference, March 2018, DOI: 10.21125/inted.2018.1706
3. Jana Marie Šafránková, Lenka Emrová, Conflict management competence by university students, January 2018, DOI: 10.20472/IAC.2018.035.038
4. Bashynska, I., Baldzhy, M., Ivanchenkova, L., Nikoliuk, O., Tkachuk, G., Game risk management methods for investment portfolio optimization, International Journal of Recent Technology and Engineering, 8(2), 2019, pp. 3940-3943 DOI: 10.35940/ijrte.B1729.078219
5. Natalia Stanislavovna Kozulina, Andrej Yur'evich Karachev, Ekaterina Viktorovna Ahmedzyanova, Fabbing as a negative factor in the formation of competences of university students, November 2016, DOI: 10.12731/2218-7405-2016-10-56-65
6. Luis Humberto Mendoza-Huizar, Clara Hilda Rios Reyes, Anabel Velásquez Durán, Analysis of Digital Competences in University Students of Electrochemistry, October 2019, ECS Transactions, 94(1), pp. 133-138, DOI: 10.1149/09401.0133ecst
7. Andrea Seňová, Evaluation of management competencies of university students, Conference: 2nd International Multidisciplinary Scientific Conference on Social Sciences and Arts SGEM2015, August 2015, DOI: 10.5593/SGEMSOCIAL2015/B12/S3.053
8. Remedios Hernández-Linares, Enrique Agudo, Mercedes Rico, Héctor Sánchez, Transversal Competences of University Students of Engineering, June 2015, Croatian Journal of Philosophy, 17(2), DOI: 10.15516/cje.v17i2.1062
9. Julie Furst-Bowe et al., An analysis of required competencies for university students, December 1995, DOI: 10.1080/08886504.1995.10782159
10. Daniel Shek, Cecilia Ma, Emotional competence: A key leadership competence for university students, January 2016, International Journal on Disability and Human Development, 15(2), DOI: 10.1515/ijdh-2016-0701
11. V. Panachev, L. Zelenin, A. Opletin, A. Legotkin, R. Kusekova, Development of health saving competence for university students, May 2018, Journal of Global Pharma Technology, 10(5), pp. 226-233