

STRENGTHENING THE HUMAN RESOURCES POTENTIAL OF THE FOOD INDUSTRY IN THE CONTEXT OF PROFESSIONAL CREATIVITY

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Abstract - The essence of readiness for creative professional activity is considered and for the first time the concept of “readiness of future engineers-teachers of food industry for creative professional activity” is formulated. The readiness of future engineers-teachers of the food industry for creative professional activity is characterized by the stable attitude of higher education seekers to active and appropriate actions to perform future professional duties, which is manifested in the positive attitude to the content of activities, the desire to make efforts and psychophysiological system. The structure of readiness as a reference point for training of new generation specialists, able to solve complex specialized tasks and practical problems in professional (professional-technical) education and food industry. Clarified the content of its main constructs, namely, the motivational-value (is associated with the substructure of personality orientation, which combines the orientation, attitude and moral qualities of the individual), cognitive-activity (is associated with the substructure of experience, which includes acquired knowledge, skills, abilities and individual features of mental processes) and personality-reflective (is associated with the substructure of forms of reflection, which covers individual features of individual mental processes or mental functions as forms of reflection and biologically determined substructure, which includes certain personality traits) components, is clarified. The level of formation of creativity of future engineers-educators of the food industry as an element of the personality-reflective component of readiness for creative professional activity at the stage of identification in professional training was experimentally tested. Applied the Statistical methods to track the percentage of creativity indicators.

Keywords - Food Industry, Readiness, Creative Activity, Engineer-Teacher.

I. INTRODUCTION

Globalization, democratization of society, changing development priorities in the economy, which are associated with the reorientation to market relations, entering the world market and the accelerated development of certain sectors of the economy in Ukraine, create a number of problems and contradictions in higher education. It is the transition to a market economy that requires the training of competitive professionals with professional mobility, high professional culture, dynamic skills, able to think independently and creatively, who are able to effectively and creatively solve professional problems. All this requires extraordinary new approaches to the formation of the content of higher education, its modernization in the context of dynamic socio-economic changes. Research on the theory and methodology of higher education should be aimed at predicting the development of this education and be advanced, the content of which should be constantly updated to take into account the dynamic changes in science, economics, engineering and focus on new technologies. There is an understanding in society

that without the training of a highly qualified manufacturer, without real care for the higher education system, it is impossible to revive the country's economy [1]. Thus, the main task of higher education is to create optimal conditions for the formation of a professional with the disclosure and development of his/her professional abilities and talents in mastering the future specialty.

The innovative way of development of a society can be provided, having formed generations of people who think and work in a new way. The modern specialist must have a sense of responsibility for the results of professional activity in their field, strive to master and apply the latest production technologies, forms and means of labor. This primarily applies to engineering and pedagogical staff, as they, according to the specifics of their activities, must continuously acquire new knowledge, skills, abilities in the relevant production and educational field. Such targeted guidelines require pedagogical science and practice to find ways to improve the training of engineering and teaching staff in the system of higher professional education and prioritize the training of professionally competent professionals [2].

Today the main tasks of a food specialist are not only the organization and conduct of technological processes of food production, but also their improvement and development of fundamentally new technologies, the introduction of foreign technologies, equipment and quality systems. In view of this, the problem of training such specialists who can carry out both traditional and new technological processes, improve them and develop new recipes, technologies and equipment has become acute for higher education institutions [3].

At the present stage of development of pedagogical education there are requirements for teachers of the new generation, in particular engineers-teachers of the food industry [4], which should differ: the ability to solve complex specialized problems and practical problems of teaching, education and development (including those characterized by complexity and uncertainty of conditions); high indicators of intellectual development and emotional intelligence, focus on the teaching profession; mobility, personal responsibility for their own continuous professional development, attitude to the perception of the new, the ability to personal creative development, innovative pursuits and discoveries.

That is, there is a need to strengthen the human resources of the food industry in terms of their willingness to quickly navigate the changing working conditions in industry and education.

II. LITERATURE REVIEW

The need to increase the level of professional readiness of specialists for various industries is emphasized in the following legal documents: Law of Ukraine on Higher Education [5] - preparation of competitive human capital for high-tech and innovative development, self-realization, satisfaction of needs of society, labor market and state in qualified specialists; The concept of implementation of state policy in the field of vocational (technical) education "Modern vocational (technical) education" for the period up to 2027 [6] - the formation of a new image of the graduate (comprehensively developed personality, able to choose an individual educational trajectory, lifelong training, professional career development, entrepreneurship and self-employment, competitive and mobile specialist in the labor market, a person who has acquired educational and professional competencies in accordance with his/her interests, abilities, capabilities, needs of the national economy and society); The National Qualifications Framework [7], based on European and national standards and principles of quality assurance in education, takes into account the requirements of the labor market to the competencies of employees and is introduced to harmonize legislation in the field of education and

social relations, promote national and international recognition of qualifications, obtained in Ukraine, establishing effective cooperation between education and the labor market, etc.

General scientific, psychological and pedagogical principles and positions became the scientific and theoretical basis for determining the content of the research. In reference and encyclopedic publications in general, readiness for activity is characterized by a stable attitude of the individual to certain behaviors and certain operations, which is manifested in a positive attitude to the content of activities, the desire to make efforts to implement it by mobilizing their own psychological and psychophysiological system. In the psychological aspect, "readiness for activity" is considered by researchers (V. Bronnikova, R. Vavryk, O. Yemchyk, O. Kryvylov and others) as a complex psychological formation that combines motivational, intellectual, emotional and volitional potential of the individual, which promote successful activity under conditions of their activation. In the field of professional activity, in particular pedagogical, scientists (I. Gavrish, E. Zeer, R. Seryozhnikova, E. Symanyuk and others) characterize readiness is as the attitude of the specialist to active and appropriate actions to perform professional functional duties based on experience and purposeful manifestation of beliefs, views, attitudes, motives, feelings, volitional and intellectual talents, knowledge, skills and abilities

Of particular importance for our study is the understanding by researchers (O. Voloshenko, O. Guzalova and others) of the essence of the readiness for creative activity as a stable attitude of the individual to active and appropriate actions to perform professional functional duties, which is manifested in a positive attitude to the content, the desire to make efforts to implement it through the mobilization of their own psychological and psychophysiological system (which combines motivational, intellectual, emotional and volitional potential of the individual) based on the use of creative elements in achieving the expected results.

The problem of improving the quality of training for different areas of the economy was considered in the works of various researchers (A. Belyaev, L. Eremin, M. Skyruta, O. Shandyba and others). In general, the researchers, regardless of the object and subject of research, attach special importance to human potential, the development of which is associated with overcoming crisis phenomena in society, in particular in the field of industry and education. Human is a part of wealth and the goal of social production, he/she is considered not only as a factor of social development, but also as the main subject who enjoys its results [8]. That is why the determining factor for the effective operation of any enterprise is human capital, which is its wealth,

one of the highest values, the key to leadership, competitiveness, progress, which are achieved through knowledge, information, innovation, the source of which is human. The development of human capital is influenced by many factors that contribute to its accumulation throughout life [9]. At the same time, the accelerated development of the material and technical base of production has changed the problems of human development and its productive abilities in ensuring economic growth [10].

Thus, the analysis of legal documents, psychological and pedagogical literature and research shows a significant attention of researchers to the training of competitive professionals in industry and education. However, changing working conditions in vocational (technical) education and food industry require the latest approaches to the training of future engineers-teachers, in particular the formation of their readiness for creative activity.

III. PURPOSE

The purpose of the study is to theoretically substantiate the structure of the readiness of future engineers-teachers of the food industry for creative professional activity in accordance with the requirements of the modern labor market.

Objectives of the study: to consider the essence of the readiness of future engineers-teachers of the food industry for creative professional activity; to determine the structure of the readiness of future engineers-teachers of the food industry for creative professional activity; experimentally check the level of creativity of future engineers-teachers of the food industry at the stage of identification in professional training.

IV. METHODS

Analysis of legal documents, psychological and pedagogical literature and research to determine the essence of the readiness for creative professional activity; content analysis to clarify and specify the conceptual and categorical apparatus for understanding the constructs of the readiness of future engineers-teachers of the food industry for creative professional activity; synthesis, comparison and generalization of scientific experience in the context of the problem of strengthening the human resources of the food industry; diagnostics and search experiment to assess the level of creativity of future engineers-teachers of the food industry at the stage of identification in professional training; statistical methods (quantitative and qualitative data processing, graphical presentation of results) to track the percentage of creativity; formulation of conclusions and determination of prospects of further researches in this direction.

V. RESULTS

According to the concept of human capital, education is seen as a key factor in increasing the social well-being of the nation and the state. Human capital is understood as abilities, acquired through formal training or education, or through practical experience (Edwin J. Dolan) [11]; innate abilities, talent, education, acquired qualifications (S. Fisher) [12].

The critical analysis of the practice of staff training for various areas of professional activity, the level of their professional readiness and competence indicates the need for radical changes in the practice of higher education, especially pedagogical. The study and analysis of the work of novice specialists allow us to talk not so much about the lack of professional knowledge and training, but about the low level of activity of the professional position and creative style of yesterday's university graduates. The shortcomings in training can be explained to a greater extent by the vagueness, eclecticism, dogmatism of the goals of professional training of future engineers-teachers in the field of food technology in higher school. It should be noted, that the university process is not yet aimed at the system of formation of creative personality of students and the implementation of different ways to develop their creative abilities in the course of learning.

New training requirements necessitate the creation of a new model of preparing students for professional activities in higher education by combining the efforts of all university departments to form the personality of the future engineer-teacher in the field of food technology, corresponding to social orders and new trends in modern society [13].

Modern society is interested in training competent, professionally mobile professionals, ready and able in a short time to acquire new knowledge, skills and abilities in accordance with changes in the content and scope of work. It is the formed readiness that is a crucial condition for the rapid adaptation of a specialist to professional activity, effective performance of professional duties, self-control and self-realization [14; 15; 16; 17].

In determining the structure and content of the readiness of future engineers-teachers of the food industry for creative professional activity, we took into account:

- the main types of professional activities of engineers-teachers of the food industry in institutions of vocational (technical) education, such as: pedagogical - theoretical and practical training of students; organizational-methodical - methodical activity and organizational-administrative activity; self-educational - auto-activity and acme-activity;
- system of professional functions, performed by engineers-teachers of the food industry in institutions of professional (vocational) education, such as: prognostic, motivational, educational,

upbringing, developmental, communicative, technical, control, diagnostic, methodical, organizational, managerial, research, design;

- system of operations (skills, knowledge and understanding), required to perform professional tasks;

- features of creative activity that are manifested in goals, process and results of solving specialized tasks and practical problems in vocational (technical) education and food industry;

- features of the creative personality, which are connected with the intellectual, emotional, reflexive, volitional, motivational and activity spheres;

- a dynamic model of personality structure within the system-activity approach according to K. Platonov [18], which contains substructures of orientation, experience, forms of reflection and biological conditioning.

Summarizing the achievements of researchers (E. Zeer, E. Symanyuk, T. Lozytska and others) and based on the peculiarities of creative activity and creative personality, we formulated the concept of readiness of future engineers-teachers of the food industry for creative professional activity and identified its structural components: motivational-value, cognitive-activity and personal-reflexive.

The readiness of future engineers-teachers of the food industry for creative professional activity is characterized by a stable attitude of higher education seekers to active and appropriate actions to perform future professional duties, which is manifested in a positive attitude to the content of activities, the desire to make efforts and psychophysiological system (which combines motivational, intellectual, emotional and volitional potential) based on the use of elements of creativity in achieving the expected results.

The first component of the readiness of future engineers-teachers of the food industry for creative professional activity – motivational-value - is associated with the substructure of personality orientation, which combines the orientation, attitude and moral qualities of the individual. It is not generated by natural inclinations, but is formed through education and is socially conditioned. Personality orientation as a system of motivations is the main structural component of personality.

Given the subject of our study, we turn to the category of professional orientation, which begins with the applicant's acceptance of a certain professional activity and the desire to implement it, which stimulates action in this direction. Motivation to action is a motivation that determines the organization, activity and stability of behavior in professional activities. As part of the professional orientation, it activates the needs in relation to professional activities and helps to assess the possibilities of its successful implementation.

The effectiveness of professional activity largely depends on the direct attitude of future engineers-teachers of the food industry. This attitude is reflected in the motives of professional activity, which can be realized in a number of forms: interests; aspirations; beliefs; dispositions.

Thus, the motivational-value component of the readiness of future engineers-teachers of the food industry for creative professional activity is characterized as: internal acceptance of the goals of professional activity, focus on its tasks, basic professional functions, corresponding to certain types of professional activity in professional institutions of vocational (technical) education, and are characterized by creative content; interest in finding non-standard ways to solve specialized tasks and practical problems in the field of professional activity; a strong desire to achieve the expected results on the basis of values, ethics, beliefs and professional dispositions.

The second component of the readiness of future engineers-teachers of the food industry for creative professional activity - cognitive-activity - is associated with the substructure of experience, which includes acquired knowledge, skills, abilities and individual features of mental processes.

The professional activity of food engineers-educators is based on information, consisting of knowledge about the external environment and internal potential. In the process of performing professional functions, they perceive and process information, make and implement decisions, comprehend different options for action, use the acquired knowledge, skills and abilities, predict possible situations, improve ways of working. Psychological factors of such actions are cognitive processes, emotional and volitional states and personality traits.

Regarding the subject of our study, we focus on the features of cognitive processes of the creative personality. Performing certain actions of creative professional activity we connect with creative skills: problem vision, ability to put forward hypotheses, original ideas, ability to research activity; ability to identify contradictions, ability to overcome the inertia of thinking; ability to analyze, integrate and synthesize information, find logical relationships between individual parts of the whole and ability to communicate interpersonally.

These skills are part of the professional (general and special (occupational)) competencies of future food engineers, which we associate with creative activities. For example, the ability to learn and master modern knowledge; ability to show initiative and entrepreneurship; ability to manage training/development projects; ability to guide students to progress and achievement; ability to manage complex actions/projects, be responsible for decision-making in unpredictable conditions and professional development of students and

subordinates; ability to collect, analyze and interpret information (data) according to specialization and others [19].

Thus, the cognitive-activity component of the readiness of future engineers-teachers of the food industry for creative professional activity is characterized as follows: understanding of theories, principles, methods and concepts in the field of professional activity and its creative possibilities; formation of cognitive and practical skills and abilities to solve specialized tasks and practical problems in the field of professional activity by means of a creative approach.

The third component of the readiness of future engineers-teachers of the food industry for creative professional activity - personal-reflexive - is associated with the substructure of forms of reflection, which covers individual features of individual mental processes or mental functions as forms of reflection and biologically determined substructure, which includes certain personality traits.

The success of the professional activity of engineers-teachers is determined by the degree of formation of professionally important qualities, which are designed to ensure a successful start and high performance [20].

Based on the analysis of creative personality, professionally important qualities of engineers-teachers, requirements of the readiness for creative professional activity, we single out the following properties (qualities) of future engineers-teachers of the food industry, which contribute to the efficiency of special tasks and professional problems, such as:

- creative psychological properties: curiosity, intuition, emotionality, empathy, sense of humor, reflexivity;
- dominant professionally important qualities: organization, communication and independence.

Curiosity in professional activities, in particular, of engineers-teachers of the food industry, is expedient to consider as the presence of cognitive interest in acquiring new knowledge; finding new ways of thinking; creative activity to understand the essence of objects and phenomena in solving professional tasks, solving non-standard problems.

In the pursuit of knowledge, inquisitive professionals actively use previous experience, which is associated with a psychological property - intuition, which is seen as the ability to understand, shape and penetrate the meaning of events, situations, objects through insight, enlightenment, rapid subconscious inference, comprehension [21]. The formed intuition of future engineers-teachers of the food industry should promote finding of new potential ways of activity in unusual conditions.

The readiness for creative professional activity of future engineers-teachers of the food industry is connected with the experience of new emotions, manifestation of which is admiration for

the future result and focus on the subject of creativity. Emotionality is characterized by the presence of their own emotional resource, in particular empathy, which ensures the effectiveness of actions through a positive perception of participants in professional activities, understanding their emotions and managing them, predicting their behavior.

A special manifestation of emotion in professional activities is humor. The sense of humor of future engineers-teachers of the food industry is characterized by stress-protecting potential, which is manifested in protection from negative emotions and states, the occurrence of which is due to experiencing difficult professional situations, including conflict.

The emergence of reflection in future engineers-teachers of the food industry indicates a high level of self-awareness of the future specialist, readiness for professional self-improvement and self-development, which is manifested in the ability to take an analytical position on themselves and their professional activities, including creative.

Thus, the personal-reflexive component of the readiness of future engineers-teachers of the food industry for creative professional activity is characterized as follows: the formation of professionally important qualities and creative mental/psychological properties in accordance with the requirements of engineering and pedagogical and creative activities; ability to personal creative development, innovative searches and discoveries; ability to assess their own creative potential and use the experience, gained in achieving the expected results of professional activity.

Based on certain components of the readiness of future engineers-teachers of the food industry for creative professional activity (motivational-value, cognitive-activity, personal-reflexive), we distinguish six criteria (motivational, ethical-professional, cognitive, operational-activity, personal-creative and evaluative-effective), according to which we evaluate its formation. Each criterion is a set of several indicators that characterize the most significant manifestations of the components of the specified readiness. Thus, to check the formation of the personality-reflexive component of the readiness of future engineers-teachers of the food industry for creative professional activity, we use personal-creative and evaluative-effective criteria.

In order to experimentally test the level of creativity of future engineers-teachers of the food industry as an element of personal-reflexive component of the readiness for creative professional activity, diagnostic tools were selected - test "Creativity" (according to N. Vyshniakova [22]). Based on the analysis of the results of the study of reflection of the image "Me-real" and the idea of the image "Me-ideal", revealed creative tendencies and built a psychological creative profile of future engineers-teachers of the food industry, studying in the 4th year.

The pedagogical experiment was implemented on the basis of the higher education institutions of Ukraine, which implement educational activities at the first level of higher education in the specialty 015 Vocational Education (Food Technology).

Applicants for higher education were asked to answer 80 questions, 10 of which are aimed at determining the self-esteem of 8 properties of creativity: such as: creative thinking (T_r ; T_i), curiosity (C_r ; C_i), originality (O_r ; O_i), imagination (Im_r ; Im_i), intuition (In_r ; In_i), emotionality (E_r ; E_i), sense of humor (H_r ; H_i), creative attitude to the profession (P_r ; P_i). All questions were answered twice: the first time from the point of view of “Me-real”, the second time - from the position of “Me-ideal”.

Based on the results of the study, both individual indicators of higher education applicants and average indicators of the sample are analyzed for a generalized idea of the formation of the creative attitude of future engineers-teachers of the food industry to creative professional activity at the stage of professional training identification.

The average indicators were distributed as follows: creative thinking ($T_r=6.6$; $T_i=7.3$), curiosity ($C_r=5.6$; $C_i=6.1$), originality ($O_r=6.8$; $O_i=6.8$), Imagination ($Im_r=6.4$; $Im_i=6.7$), intuition ($In_r=5.8$; $In_i=5.8$), emotionality ($E_r=7.1$; $E_i=6.6$), sense of humor ($H_r=5.3$; $H_i=5.4$), creative attitude to the profession ($P_r=5.7$; $P_i=6.8$).

The obtained data testify to the real formation of these properties and indicate the range of search level of the creative attitude of future engineers-teachers of the food industry to creative professional activity - $C_r \approx 6.16$. However, the practical lack of demands for the immediate development of creativity, which is equal to $C_i \approx 6.44$, is worrying.

For the sake of clarity, the indicators of the study are presented graphically. According to the results of diagnostics, 2 profiles of creativity are built on the circle: “Me-real”, “Me-ideal”, which are superimposed (Figure 1). There are 8 sectors in each profile, on the axes of which quantitative indicators are plotted (maximum score - 10). It is necessary to mark the radial axes into ten equal parts, then - to postpone the results – points, corresponding to the creative quality. These points need to be combined, which allows to illustrate the psychological profile of creativity and with the help of clarity to interpret the results. Such profiles are an illustration of the relationship between the existing and desired level of creativity, a reference point for further development, to compile an individual program of creativity realization.

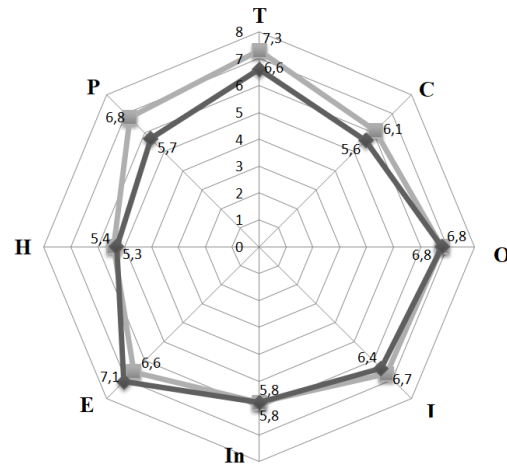


Figure 1: Creativity profiles
 — Profile “Me-real”
 — Profile “Me-ideal”

The analysis of the experimental data showed that, according to the image of “Me-real” and the representation of the image “Me-ideal” of future engineers-teachers of the food industry, the formation of creativity mainly corresponds to the search level. By calculating the Student's t-test, the reliability of the coincidences and differences of the images “Me-real” and “Me-ideal” was determined. To do this, we formulated two hypotheses: H_0 - differences in the level of creativity formation of higher education students according to the images of “Me-real” and “Me-ideal” are not significant enough; H_1 - differences in the level of creativity formation of applicants for higher education according to the images of “Me-real” and “Me-ideal” are quite significant.

The value of the t -test was determined by the formula:

$$t = \frac{M_1 - M_2}{\sqrt{\frac{S_1^2}{N_1} + \frac{S_2^2}{N_2}}}, \quad (1)$$

where M_1 and M_2 are the mean values of the first and second samples; S_1 and S_2 - variance (standard deviation) for the first and second samples, respectively; N_1 and N_2 - the number of scores in the first and second samples.

To calculate this indicator, the variance was determined by the formula:

$$S^2 = \frac{\sum_{i=1}^n (x_i - \bar{x})^2}{N - 1}, \quad (2)$$

where $(x_i - \bar{x})^2$ - the square of deviations of individual values of features from the arithmetic mean; N - the number of signs.

The variance was obtained, the value of the t -test was calculated. The tabular value of the Student's t -test is greater than the calculated ($t_{table} (1.7033) > t_{calc} (0.63)$). This indicates that the null hypothesis is not rejected, both samples belong to the same general complex, i.e. they are homogeneous for a confidence level of 0.05 (probability 5%), which, in turn, suggests the insignificance of differences in the

level of creativity of future engineers-teachers of the food industry (according to the images of “Me-real” and “Me-ideal”), and are conventionally equal.

Thus, the level of creativity formation as an element of the personal-reflexive component of the readiness of future engineers-teachers of the food industry for creative professional activity does not fully meet the requirements of engineering-pedagogical and creative activities, in particular needs further development of the ability to assess their own creative potential, achieving the expected results of professional activity.

VI. CONCLUSION

The readiness of future engineers-teachers of the food industry for creative professional activity is characterized by the stable attitude of higher education seekers to active and appropriate actions to perform future professional duties, which is manifested in the positive attitude to the content of activities, the desire to make efforts and psychophysiological system (which combines motivational, intellectual, emotional and volitional potential) based on the use of the creativity elements in achieving the expected results. The readiness of future engineers-teachers of the food industry to creative professional activity consists of interconnected components: motivational-value, cognitive-activity, personal-reflexive.

The experimental verification of the level of creativity of future engineers-teachers of the food industry at the stage of identification in training indicates the need to develop the ability to assess their own creative potential and use the experience in achieving the expected results of professional activity. We see prospects for further research in this direction in the development of a model of professional training of future engineers-teachers of the food industry for creative professional activity.

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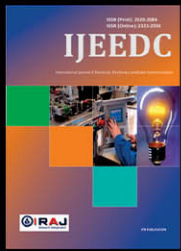
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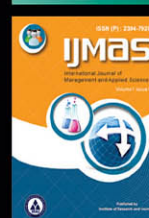
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