

THE PROCEDURE FOR THE INTEGRAL ASSESSMENT OF THE UNIVERSITY STUDENTS' COMPETENCE: THE POSSIBILITIES AND POTENTIAL OF EXPERIMENTAL METHODS

^aIRYNA SHUMILOVA, ^bIRYNA CHEREZOVA, ^cOLENA HORETSKA, ^dNATALIIA SERDIUK, ^eVIKTORIIA FEDORYK

^aNational University of Life and Environmental Sciences of Ukraine, 15, Heroiv Oborony Str., 03041, Kyiv, Ukraine

^{b-e}Berdiansk State Pedagogical University, 66, Zhukovs'ki Str., 69000, Zaporizhzhia, Ukraine

^aaz.kurshifb@gmail.com, ^birinacherezova69@gmail.com,

^cgorecka73@gmail.com, ^dSerdyknata85@gmail.com,

^efedorikv@gmail.com

Abstract: The study determines the realism of precisely the integrative approach for assessing the complex, multidimensional, multiaspect structure of universities' graduates competence. The justification of integrative approach, carried out in the context of the experimental paradigm of assessing the competence of a university student, allows noting its advantages for the implementation of one of the basic principles of assessment - the principle of completeness and comprehensive nature of the assessment, which is especially important for assessing the student's unified social and professional competence, considered as a holistic (integral) result of education. It is shown that, understanding the integrative approach as a holistic representation of a set of objects, phenomena, processes, united by the commonality of at least one of the characteristics, as a result of which its new quality is created, integration should not be considered as the sum or mechanical combination of the assessment results for each of the selected assessment plans but as their organic interpenetration. Without excluding the specifics and independence of the individual parts of the assessment, integration ensures their connection, coordination, ordering, as well as their functioning in a holistic process and presentation in a single integrative form.

Keywords: integral assessment; integral competence; experimental assessment; case study; competency-based education.

1 Introduction

Today, the categorical imperative of the development of higher education is revealed in the postulates of the cognitive, axiological, cultural, and communicative paradigm of pedagogy. With this approach, the dominant is not the amount of acquired knowledge and skills, but personal development, the ability to synthesize and analyze information, the ability to independently make the right decisions in a non-standard environment. The educational process of university and self-education are designed to contribute in every possible way to the expansion of cognitive activity of students, the activation of their own intellect and moral 'tension', the formation of the professional competence of a specialist [1; 2; 11].

Scientific and practical efforts and the researchers' search in the training of specialists are due to the need to resolve the contradictions that have arisen in modern higher professional education often even in highly developed countries:

- Between the socio-economic development of society and the pace of modernization of the higher education system;
- Between the theoretical elaboration of the humanistic paradigm of education and its practical implementation;
- Between modern requirements for the personality of a professional and the methods and forms of training of specialists prevailing in universities;
- Between the theoretical level of development of the relevant science and its implementation in the content of education.
- Known contradictions are observed both in the theory and practice of intrauniversity activities, the essence of which is as follows:
- Demands of the labor market are insufficiently satisfied in the practice of university training of specialists;
- The individual characteristics and capabilities of students as consumers of educational services are little taken into account by university educational departments and teachers;
- The humanistic paradigm is more declared than implemented in the educational process of higher education;

- Self-education of students, which is the cornerstone of continuous education, is not given due attention in a systematic nature;
- The importance of the development of cultural and moral values of students is not fully understood by the teaching staff [6];
- Reproductive methods and forms of education prevail in the methodology of university teaching.

The resolution of the noted contradictions actualizes the problem of developing the student's professional competence and related issues, the main of which we see as the individualization of education, a systematic and integrative approach to the educational and cognitive activities of students, the development of their creative abilities, the orientation of teachers to co-creative, interactive communications with students.

The measurement that university teachers carry out in the learning process requires the development of a sufficiently portable and reliable methodology that they can use in real learning conditions. Such a methodology does not currently exist, since there is no holistic methodology for assessing student learning in terms of a competency-based approach. In fairness, it should be noted that even in the conditions of the implementation of the latest generation standards, there is no unified method and methodology. The practice of assessment at the university represents a combination, sometimes a complex of different methods in order to confirm the compliance of the learning process with the state educational standard.

There are several reasons to address the problem of assessment in the process of teaching students. First, at each stage of the development of education, the goals of assessment change. Secondly, the objects of evaluation change. Finally, thirdly, the means and procedures of evaluation are changing. Consequently, the methodology of assessment in the process of teaching students is developing.

In case of the formation of the university students' competencies, we must say that the purpose of assessing this process is to improve learning, since the competencies mastered by students are the unity of the content of a certain activity and the methods of its development. Therefore, it seems legitimate to us the question of the methodological foundations for assessing the formation of competencies of university students. Many authors see cognitive theory as such a basis, which for a long time occupied leading positions in the psychology science of the 20th century [13; 15; 20; 22]. As Bryan and Clegg note in their work, cognitive psychology "has retained the notion of hierarchies characteristic of behaviorism, replacing, however, the hierarchies of simple conditioned reflexes from which complex forms of behavior are produced, by hierarchies in which complex mental processes are composed of more elementary processes" [3, p. 74].

In relation to the learning process, this means that the knowledge, skills, and abilities of students can be decomposed into components. Moreover, both knowledge, skills, and their elements and components are invariant with respect to conditions, activities, etc. and, therefore, are valuable in themselves. This means that testing is quite enough to assess the learning process, and these elements should act as objects of assessment.

However, modern cognitive theory argues that this approach is not true. Learned individual facts are quickly 'erased' from memory, because they do not make sense and do not fit into the student's conceptual map [19]. The knowledge acquired in this way is useless, since it cannot be applied, generalized, or recalled if necessary. Meaning facilitates learning, as the learner knows where to place facts in his mental picture; and meaning makes knowledge useful, since the purposes and methods of application are already embedded in understanding [7]. Skills

and knowledge are now considered dependent on the context in which they were acquired and tested; facts cannot be learned individually and then inserted into any context. In addition, the assessment of individual components encourages the learning of individual components, and this is not enough for learning how to solve problems or develop thinking skills. "Attempts to evaluate thinking and problem-solving abilities by identifying individual components of these abilities and testing them separately from each other will interfere with the effective teaching of such skills" [22, p. 26]. Thus, the integral assessment of students' competence is becoming increasingly important. The integrative approach ensures the completeness of the assessment of the student's competence, presented in the structure of his unified socio-professional competence.

Theoretical in its essence knowledge has long been the main goal of the educational process. Meanwhile, today knowledge is becoming a tool that allows a person to make decisions in a particular field of activity. In this regard, competence is considered as the general readiness of the student to establish connections between knowledge and situations and form a procedure for solving the problem [14].

The importance of integral competence in the work and career of graduates is clearly seen in Figure 1 below, which shows the rank of necessary soft skills, ranked by employers in EU as obligatory ones in the structure of graduates' professional competence. Without them, a graduate today will not be sufficiently competitive in the labor market.

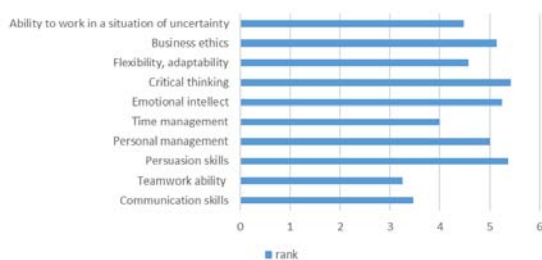


Figure 1. The importance of competence in the work and career of graduates, according to employers in EU [7]

In this context, the most significant pedagogical conditions and means of forming the competence of university students are: a) highlighting in the content of education a system-forming idea that determines intra-subject and inter-subject relationships between the disciplines of the curriculum; b) selection of the content of disciplines, taking into account the criteria of consistency, hierarchy, integrity, and pragmatism; c) managing the study of subject material by activity regulation algorithms that combine a set of indicative foundations for activities of different types.

The essence of the formation of key competencies is a purposeful process of organizing the educational activities of students to master knowledge, skills, gain experience and develop the ability to effectively use them in professional activities by strengthening the practical orientation of all types of training sessions and the opportunity to gain experience with a set of problems and facts that correspond to reality. The content is the systematization of general social, cultural, and general professional competencies, which are called integral competencies in the article.

The structure of the formation of key competencies among university students as a pedagogical process is represented by subjects and objects, purpose, tasks, patterns, contradictions, principles, technology for the formation of key competencies and their results. At the same time, the experimental model of the formation of key competencies among students is a combination of the competencies themselves, the stages of their development, methods, techniques, criteria and indicators of their formation, and the purpose of the experimental model is to develop pedagogical ways that contribute to the creation of a

favorable environment for mastering a number of key competencies that make up the basis for the effective activity of the future graduate.

2 Method

The methodological and theoretical foundations of the study were: at the philosophical and methodological level - leading philosophical ideas about the relationship between goal and means, part and whole, material and ideal, the unity of theory and practice; at the general theoretical level - the position on the unity of theory and practice, the influence of economic and social conditions on the development of the individual.

The paper uses the results of studies of a systematic approach to the analysis of pedagogical phenomena and processes, as well as studies on the introduction of a competency-based approach to the university education, on the theoretical understanding of the problem of forming the professional competence of a specialist.

3 Results and Discussion

The humanistic paradigm of higher professional education implies the appeal to the concept of professional competence, the definition of which is determined by a combination of professional and personal qualities. Methods, forms, and ways of developing professional competence are considered, on the one hand, as self-education, self-improvement of the student, on the other hand, as the activity of the teaching staff, creating opportunities for adequate development of the individual, taking into account his needs and abilities.

In turn, a rational approach to the selection of didactic principles that are most conducive to the development of the professional competence of a future specialist implies an appropriate organization of the educational process. The transition to a modern system of training specialists involves:

- Students' awareness of the purpose and meaning of their educational and cognitive activity by liberation from all forms of "consumer-contemplative consciousness";
- Building truly individual humanistic relations in the university, where the effectiveness of the educational process is determined by the ability of teachers and students to change;
- Replacement of the "ritual" [12], professional-dogmatic behavior of the participants in the educational process with a conceptual one.

The development of a student's professional competence in the humanistic space of a personality-oriented approach makes it possible for teachers and students to seek and find such relationships that stimulate the expansion of the sphere of consciousness, increase the motivation of education in order to acquire their own individual meaning in professional activity.

The stages of competence development include: diagnostic (allowing, by applying a system of diagnostic methods, to determine the current level of formation of key competencies); attitudes installation (associated with the formation of a positive attitude among students to the formation of key competencies); training (consisting in the implementation of technology aimed at the development of key competencies); evaluation and control (aimed at assessing and monitoring the level of formation of key competencies).

The most effective methodology for the formation of key competencies, which allows for an experimental assessment of integral competence, is based on activity-oriented learning, in which knowledge is acquired by students independently through the creation and development of their own knowledge base, which allows them to learn how to independently solve professional tasks.

Criteria and indicators of the formation of key competencies include the following ones: motivational (presence of the students' need to work on key competencies in their professional

activities; the presence of cognitive, competitive motives, as well as motivation to change activities); meaningful-content (availability of knowledge, skills necessary for practical activities); applied (application of acquired knowledge, skills and abilities in a particular field of activity, as well as during internships at various enterprises and organizations); evaluative-reproductive (self-assessment of the level of key competencies formation; the ability to analyze the state of competence; self-teaching and self-education to correct the state of competence).

In both exploratory assessment and measurement, the emphasis is now shifting from intermediate or final learning outcomes to learning process. This contradicts the statement contained in the educational discourse that “the learning process is not as important as the result”, but the logic of the competency-based approach is such that when assessing the formation of competencies of university students, the learning process itself is included in the object of assessment. This process is characterized by context nature, and therefore, the assessment of any of its discrete fragments (knowledge, skills, etc.) does not give an objective picture of the formation of students' competencies.

Let us consider the pedagogical experiment described by N. Rezaei [18], which was conducted to assess the formation of the social and informational competence of university students. By social information competence, the authors of experiment understand the possession of information technologies, a critical attitude to social information disseminated in the media. The pedagogical experiment involved 1st-5th year students of the specialty “Organization Management” in the amount of 752 people. The first stage of experiment included the selection of control and experimental groups based on the input testing. Testing was carried out using integrated tests in order to determine the initial level of student learning level [18].

After analyzing the curriculum for the specialty “Organization Management”, the authors determined the list of disciplines that will be included in the integrated tests. Firstly, this is a discipline from the cycle “General mathematical and natural sciences” – “Informatics (Information Science)”. Secondly, the list included the discipline “Information technologies of management” from the cycle “Special disciplines”. Thirdly, the discipline “Social Informatics” was chosen from the block of elective disciplines. Based on the test results, a selection of control and experimental groups was made.

The second stage was actually the pedagogical experiment itself. In the process of its implementation, the training of students in groups took place in different ways -namely, in the experimental group, the authors used the methods of forming social-informational competence, and in the control group, methods and technologies of training, based on the requirements of the state educational standard.

Let us dwell on the characteristics of the methods of formation of students' social-informational competence. In order to form social and informational competence, the technology of creating a virtual organization by students was substantiated and used as part of the study of the discipline “Information Technologies of Management”. This technology meets the requirements for pedagogical technologies used in the educational process. Since, in the end, the main goal of the technologization of the process is to obtain a product of a given (designed) sample, this allows concluding that the goal of the technology developed for creating a virtual organization is the formation of social and informational competence among students.

In order to form the operational component of the socio-informational competence of students, educational quests were developed and the authors of the experiment offered them to students when studying the discipline “Informatics (Information Science)”. In addition, a special course “Methods for the formation of professional competencies of students” was developed, the modular program of which is completely competence-oriented. To the main modules, the study of which is aimed at forming the professional competencies of future

managers, the authors have added such a module as “The Role of Management in the Information Society”. This section involves the study of such issues as: the influence of the information society on the methods and functions of management, new requirements for the qualification “Manager” in the conditions of digital transformation of society, the features of socio-cultural management in the information society [18].

The third stage included exit testing in order to determine the achieved level of students' learning, which should correspond to the initially set didactic goals. For this, also the method of integrated testing was used. Unlike the test that was used at the first stage of the pedagogical experiment, the exit test included fragments of larger activity blocks.

The main outcomes obtained as a result of the pedagogical experiment are presented in the table. The reliability of the obtained results was verified using Student's t-test. The result obtained indicates that the difference between the two samples is significant.

Table 1: Evaluation of the formation of social and informational competence of students [18]

Assessed competencies	Control group		Experimental group	
	K_b	K_e	E_b	E_e
<i>Work with information</i>				
Find and use various sources of information	2.1	2.6	2.1	3.5
Extract primary information (statistical source, media)	1.8	2.1	1.9	2.9
Extract secondary information	1.9	2.0	1.9	2.5
Determine the type and form of information	2.3	2.5	2.2	3.4
Reveal accuracy and relevance of information	1.9	2.2	1.9	3.0
Extract key fragments and main content from a large amount of information	2.3	2.5	2.4	3.4
Find useful information online	2.5	2.8	2.5	3.8
<i>Work in group</i>				
Express own point of view persuasively	1.7	1.9	1.7	2.5
Present reasoned arguments orally and in writing	1.5	1.8	1.6	2.4
Provide clear verbal and written information that is relevant to the needs of the group	1.7	2.2	1.8	2.8
Determine what support team members need and provide that assistance	1.9	2.1	1.8	2.5
Share experiences and information with group members	2.3	2.6	2.2	3.6
<i>Reliability of differences</i>	p<0.05		p<0.05	

Note: K_b – the average score of the assessment of students in the control group at the beginning of the experiment, K_e – average score of students in the control group at the end of the experiment, E_b – the average score of the assessment of the students of the experimental group at the beginning of the experiment, E_e – the average score of the students of the experimental group at the end of the experiment; the significance of differences was determined by Student's t-test.

The fourth stage (output questioning) was carried out in the experimental groups in order to identify the subjective assessment of students regarding the quality of the training

sessions using the methods of forming social information competence.

The fifth stage was carried out after 4 months, in order to determine the residual knowledge, skills, and abilities acquired by students during the period of experimental training. As in the third stage, the reliability of the obtained results was also checked using Student's t-test. When conducting a comparative pedagogical experiment, the authors of the experiment used information technologies of education in the educational process: visualization lectures using presentations, case technologies, business games using information technologies, creation of virtual organizations, educational quests, practical tasks using software applications, e-learning methodological complexes, development of projects using special software, including tests. In this regard, it became necessary to calculate the didactic effectiveness of the use of information technologies in the process of forming the social and informational competence of university students.

The assessment factor K_i was chosen as one of the main criteria for evaluating the effectiveness of the use of training information technologies

$$K_i = K_{in} / K_n$$

where K_{in} – group assessment obtained using information technology training, K_n – group assessment obtained with traditional learning technology [18]. In the described study, K_i turned out to be 2.3, which indicates that the use of information technologies in education is more effective in the process of forming the social and informational competence of university students.

Also, it should be emphasized that the principles of competence-based education were taken as the basis of the model of training and control by means of the case method. The case method is an integrative teaching method based on the analysis of practical situations that could or have happened in reality. Students are invited to analyze the problem, presented in an explicit or hidden form, and offer the most favorable solution in the existing conditions. The main advantage of the case method is the possibility of its application for both the formation and assessment of competence as an integrative personal characteristic, which includes the knowledge component, experience of activity, personal qualities and motives [9]. This advantage is implemented through the consideration of practical situations, the solution of which requires the use of knowledge and skills from related and non-core disciplines, as well as the integration of professional competencies with personal qualities and worldviews due to the presence of the psychological and moral aspects of the problem in the cases. The case method is an active method, which helps to increase learning motivation, because students have the opportunity to influence the learning process, to defend their own positions [16; 17].

The experimental model can be used not only as a tool for formation, but also as a tool for assessing competence in the field of management. In one of the UK universities, a model was developed in order to increase the efficiency of the educational process for the training of management personnel. Based on the goal, tasks were formed based on the principles of competence-based education [23]. Also, this model reflects the organizational and pedagogical conditions for implementation in order to increase the efficiency of competence formation by means of the case method. On the basis of this model, a technology for working with cases was developed, based on the didactic principles of consistency, openness, predictability of learning outcomes. This technology includes a description of the activities of students and teachers, forms and methods of work, the possibility of forming competencies, and the implementation of control functions. The model makes it possible to carry out the ascertaining, transforming, and generalizing stages of the pedagogical experiment. During the practical implementation of the model, at the ascertaining stage, the experts-authors of the model evaluated the level of competence formation in students of the control and experimental groups, in accordance with the

levels of distinguishing, understanding, application, analysis, synthesis, and evaluation. According to the developed scale, an independent expert group and a teacher could assess the initial level of competencies and the dynamics of competency development [23].

In the key of the selected indicators, the logic of achieving the educational result is traced, which consists in the complication of the methods of professional activity, the transition from mastering simple accessible information to mastering more complex information, as well as skills and ways of structuring it. The category of “distinguishing” or “recognition” corresponds to the ability of the student to distinguish the studied object or phenomenon from their analogues. The category “understanding” is comparable to the skills of interpreting, predicting, and converting material from one form of presentation to another. The category of “application” corresponds to the ability to use the studied material in specific conditions and new situations. The student demonstrates an understanding of the functional dependencies between the phenomena being studied, solves problems based on cause-and-effect relationships, connects the mastered material with practical and professional activities.

The category “analysis” implies the ability to break down information into components so that the structure is visible, as well as the ability to present a set of facts according to the identified structure. The fifth category - “synthesis” - corresponds to the skill of combining elements to obtain a whole that has novelty. Finally, the skills of evaluating (assessing) the value of particular information are comparable with the category “evaluation”.

The presented system for assessing learning outcomes, in the fair opinion of its authors, meets modern standards for training competitive specialists. An assessment sheet was developed for the experts, the assessment of the competencies of each student was held on a ten-point scale and correlated with the categories of achieving the educational result. So, 1-2 points of expert assessment corresponded to the category of “distinguishing”, which did not allow speaking about the concept of “competence”. The category “understanding” is comparable to 3-4 points - this number of points reflected the presence of skills in identifying the situation, classifying it as similar ones, solving the situation in connection with the algorithm for a group of similar ones. The category “application” corresponded to 5-6 points, i.e., students who were given such scores demonstrated the possibility of using a set of tools to solve non-standard situations, predicting the consequences of a decision, describing the course of a decision, the ability to compare alternative options and offer practical solutions. The category “analysis” is synonymous with seven points of expert evaluation, which stated the ability to identify a problem and describe the conditions for its solution, the necessary resources and tools, and organize the activities of a small number of specialists to solve the problem. Eight points are comparable with the category “synthesis”: the experts revealed the ability to organize work to solve the problem, the ability to monitor the effectiveness of the stages of solving the problem. Nine and ten points of the expert assessment corresponded to the category “assessment”, the ability to develop and make new proposals based on the experience gained, the ability to choose the style of leadership and managerial influence based on an analysis of the situation and the characteristics of the problem being solved [23].

By means of cases, an assessment of the level of formation of competencies and competence was also carried out, that is, cases acted as a means of control. In this context, cases were given to students at the beginning of the exam and time was provided to prepare a solution. To make a decision, it was possible to use only the information of the case, own experience and knowledge. Thus, not only the knowledge of theoretical aspects was tested, but also the expediency, the method of their application for decision making. After the expiration of time, the students proposed a solution to the case. The task could be complicated by excluding one of the resources from the case

(time, finance, etc.) or adding a moral and social aspect. Assessing the effectiveness of competence formation, the experts also took into account the results of psychological diagnostics to track the dynamics of the motivational and personal spheres [23].

Thus, the goal of experimental teaching is the formation of professional competence among students, i.e., shaping the ability to apply the acquired knowledge and skills in practical activities, which they will need to be engaged in within the chosen specialty. In the basis of effective learning activities, there is a high level of student motivation, formed by means of active teaching methods. In turn, the assessment of the results of such training plays the role of an experimental assessment of competencies.

In particular, the case method contributes to the development of the ability to analyze situations, evaluate alternatives, choose the best option and draw up a plan for its implementation. For example, the technology of group work with cases implies preparing students for the lesson in advance, i.e., receiving a case-task with a list of references for self-study. At this (preparatory) stage, the increase in motivation for learning activities can be judged by such signs as turning to additional sources, asking questions to the teacher during consultations and during training sessions. In the empirical study mentioned above, a comparison showed that in the experimental group there are (on average) 3-4 more sources in the list of additional literature than in the control group [23]. Thus, such tasks-tests within the framework of the experimental paradigm of competency assessment make it possible to effectively assess the integral competence of students, which includes, in particular, the ability to independently find and apply the necessary information.

The use of the case method and other interactive methods of teaching and control makes it possible to implement a competency-based approach, develops a methodological system of teaching, and enriches the content of disciplines. In turn, the implementation of integrative education requires the presence of three components: a) teachers who are fully versed in modern pedagogical technologies; b) psychological and pedagogical technologies adapted to specific conditions, aimed at developing the professionalism of teachers; c) didactic support of the educational process at different levels of education [5; 17].

Ensuring a high level of creative activity of students in the process of self-education requires solving problems: analytical ones (reconstruction of traditional situations), problematic (resolving contradictions using existing knowledge and skills), search (performing non-standard methods and actions) [17]. Accordingly, the experiential assessment should contain modules for stepwise evaluation of all three of these components.

Louis Soares from the Center for American Progress back in 2012 offered a conceptual learning model (see Figure 2 below). He noted that “With a competency-based approach, students advance when they have demonstrated mastery of a competency, which is defined as “a combination of skills, abilities and knowledge needed to perform a task in a specific context” [21, p. 2].

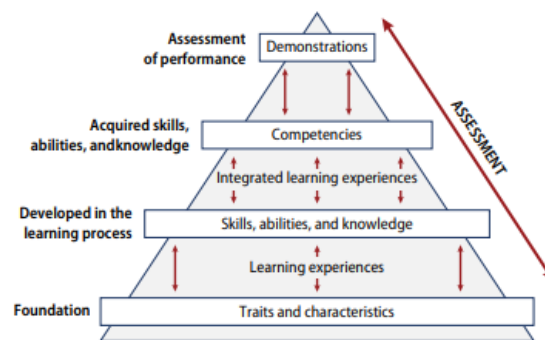


Figure 2. A conceptual learning model within the context of assessment [21]

“In competency-based education, assessment is embedded in every step of the learning process in order to provide students with guidance and support toward mastery. This heightened level of assessment is designed to build competencies in real time” [21, p. 2].

In our teaching and consulting practices, we recommend creating a cyclic step-by-step system of involving students from the first to last year in research work. This program provides: a) at the first, propaedeutic, stage - familiarization of students with the main directions and topics of scientific research of the department and teachers, initial acquaintance with the methods of scientific research; b) at the second stage - the organization of research work in educational activities (at special seminars, when writing term papers, scientific reports, etc.), the participation of students in the work of scientific societies, problem groups; 3) at the third stage - individual (and collective) research work on a specific topic.

The research assignments we are developing are a synthesis of theoretical and practical work. Theoretical tasks are aimed at mastering the ability to analyze primary sources, navigate in bibliographic publications. They become more complicated from course to course: in the 1st year, students master the ability to extract the necessary information on certain issues; in 2nd-3d years, they learn to analyze primary sources, synthesize information from different sources, abstract, review primary sources, make annotations, draw up scientific abstracts, prepare a report on the problem; at 4th-5th years, future specialists master and improve the ability to search for the necessary literature, analyze it, compile a bibliography, literature reviews, and give its critical analysis. Practical research involves a scientific analysis of certain production experience, understanding of specific situations and modeling more effective content and methods of work. For example, for future teachers, an important means of forming effective knowledge, skills, and developing creative activity is the use of such teaching methods as discussions of the work of innovative teachers, acute problems of innovative schools, business games, and modeling of pedagogical situations [5].

Revealing the theoretical and methodological, as well as didactic features of self-education and research work of students, assessed on the basis of an experimental approach, it is necessary to develop a system for their organization, specific forms of independent research activity that form the creative abilities of future specialists as the foundation of integral competence.

The assessment of design competence requires quantitative assessments - therefore, of course, there is a need to develop parameters that would satisfy the conditions of objectivity, accessibility, and ease of definition. Thus, for each specialty and taking into account the characteristics of a particular university, a system of indicators and criteria for the formation of design competence is needed. For these purposes, it is advisable to single out such criteria of competence: cognitive, activity, and

personal. Each criterion should have a number of indicators describing its manifestations. An analysis of the scientific literature on the correlation of knowledge, skills, and personality traits in the overall effective assessment of specialist training made it possible to identify the following weight coefficients of competence components: cognitive component (K_c) - 0.2; activity component (K_a) - 0.5; personal component (K_p) - 0.3 [10]. These weights can be used in calculating the numerical coefficients of integral competence in the process of experimental assessment. Also, to assess the formation of the selected components of competencies, it is advisable to use expert assessment, which is carried out by teachers, self-assessment (during the survey before and after the project session of the experimental assessment), and mutual (peer) assessment. Such an approach would facilitate a kind of triangulation of the results of assessment, increasing its credibility. In addition, this is a step towards creating an assessment center in education, using project activities to involve students in assessment.

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Primary Paper Section: A

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