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Educator's Creative Activity Structure in the Context of the Modern Requirements

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Roman Kurok, National Academy of Pedagogical Sciences of Ukraine, Ukraine,

<https://orcid.org/0000-0001-6855-3830>, E-mail: romaku2010@gmail.com

Liana Burchak, Oleksandr Dovzhenko Hlukhiv National Pedagogical University, Ukraine,

<https://orcid.org/0009-0001-6141-4384>, E-mail: liana1335502@gmail.com

Vira Kurok, Oleksandr Dovzhenko Hlukhiv National Pedagogical University, Ukraine,

<https://orcid.org/0000-0003-1474-3879>, E-mail: ViraKurok@gmail.com

Stanislav Burchak*, Oleksandr Dovzhenko Hlukhiv National Pedagogical University,

Ukraine, <https://orcid.org/0000-0002-1641-3251>, E-mail: stas5578086@gmail.com

Tetyana Hrebenyk, Separate structural department «Classical Professional College of Sumy

State University», Ukraine, <https://orcid.org/0000-0002-9529-6742>, E-mail:

up.grebenik@gmail.com

***Corresponding Author:** 24, Kyivska St., 41400, Hlukhiv, Shostka District, Sumy Region, Ukraine.

Authorship Contribution Statement

Kurok R.: Created research concept and design. Burchak L.: Had a part in research data collection and analysis, wrote the introduction part of the manuscript. Kurok V.: Made the analysis of the processed data, critical reviewed the main part of the article. Burchak S.: Had a part in the paper creation; reviewed and made final checking the research results presentation. Hrebenyk: Was responsible for statistical processing of the research results. All the authors have read the paper and approved the final manuscript version for the sending to the Journal.

Abstract: Ukraine's current social and economic state is characterized by the search for ways to improve the quality of high professional education. This puts forward new requirements for the process of training future professionals in higher education institutions because the acquisition of subject knowledge only in modern society does not make graduates competitive in the labor market. The problem of developing teachers' creativity acquires special necessity in the conditions of forming a competitive, mobile personality. Our research aim was to determine the structure of the modern teachers' creativity. The problem of creativity remains relevant even today. The expert assessment method was used to solve the outlined problem. The study presented the interpretation of the concept of "educator's creativity" and highlighted its structure. The analysis of scientific literature indicates the absence of a clearly defined structure of creativity as well as theoretical and methodological aspects of its development. Current research reveals the essence of the components of teachers' creativity, determines their content, which makes the basis for the development of diagnostic tools to measure the levels of creativity of the professionals. It was established that the selected components of teachers' creativity are interconnected, interdependent and inter-determined.

Keywords: *constituents, creative activity, education, educators, educational institution, indicators, modern requirements, structure.*

Introduction

The modern economy market demand for competitive professionals makes it a priority to develop such abilities of the individual that reveal their individual qualities, intellectual abilities and creative potential as the social development of the nation is always closely linked to creative activity. New guidelines for professional education, modern achievements in science determine the choice of the technologies that teachers increasingly prefer (ESSnet-CULTURE, 2012; Edens et al., 2015). Nowadays the focus is on the principle of human

priority as the basis for reforming the education system, according to which it is necessary to create a new socially oriented model of the economic development, where the highest value is a man, the main driving force is the realization of the nation's creative potential and creative thinking belongs to five main competencies of the decade (European University Association, 2007; Law of Ukraine "On Education", 2017; Law of Ukraine "On High Education", 2023; Ministry of Education and Science of Ukraine, 2012).

According to this, the main aim of the pedagogical education is to train a competent, qualified graduate able not only to apply knowledge, skills and abilities in practice, but also to make original and non-standard decisions in situations that arise in their professional activities (Nurbekova et al., 2018; Kaplan, 2019).

Numerous debates took place concerning this phenomenon. A number of philosophers, psychologists, educators tried to explain the problem of creative personality. However, even at present it remains insufficiently studied due to the complexity of the structure, which led to the existence of a significant number of approaches focused on various aspects of both the interpretation of the concept and the process of its developing.

Modern scientists focus their activity on the development of the theoretical and methodological grounds of creative activity, its structure, and diagnosis of personality creativity (Khamzina et al., 2020; Przyborowska & Błajet, 2020). These contradictions prompted us to carry out the outlined study. The purpose of the article was to substantiate the need for the development of a specialist's creativity in accordance with the requirements of society, the essence of the definition of "teacher's creativity", to determine its structure taking into account the method of expert evaluation.

Literature Review

A modern educator along with general pedagogical qualities must also have a number of personal creative ones. Analyzing the psychological and pedagogical works of researchers a set of teachers' personal creative qualities important in their professional activities was identified. It should be noted that the structure of creative qualities is variable and depends on the individual characteristics of the specialist, the conditions of study at the university, professional activities in the institutions of professional higher, vocational, and secondary education (Kurok et al., 2022).

We understand the concept of "educators' creative activity" as an integrative property of their personality, based on person's hereditary, innate inclinations to creative activity, actions and behavioral manifestations, enabling the ability of a specialist to qualified innovative pedagogical activities based on the methodological and professional knowledge, skills, needs, motives, cognitive processes (attention, memory, and imagination), personal qualities (activity, initiative, curiosity, and diligence), and readiness for creative self-improvement and self-development in the process of performing the professional duties (Przyborowska & Błajet, 2020).

Despite the large number of studies and publications on the creative personality's component composition, in particular intending teachers, this question remains open today, as science has no agreed opinion on the structure of creative activity yet, because only some aspects were considered and there is no unambiguous definition of its components. Based on the systematic analysis of the scientific and pedagogical research of scientists (Kurok et al., 2022; Marieiev et al., 2023) and taking into account the authors' personal experience, the components of educators' creative activity (motivational and volitional, cognitive, productive and activity, reflexive) were defined.

Under the motivational and volitional component of the educators' creative activity the system of values directing the activity of the specialists to developing their own and students'

creativity is understood (Nixon, 2020). The component involves forming values, motives, interests, inclinations, personality traits (attention, memory, imagination, activity, initiative, curiosity, and diligence), the need for self-realization, self-development, self-improvement, self-confidence, perseverance, awareness of the development of own creativity in the professional activity, motivation and readiness for innovations in the professional activity, acceptance of own creative possibilities, stimuli of behavior as life value, personally significant feature (Zadorina, 2022).

The cognitive component is a set of the pedagogical, psychological, professional knowledge, a variety of cognitive skills that form the basis of educators' creative activity. This component of creativity involves the formation of the educational achievements in a set of psychological, pedagogical and professional disciplines, knowledge of forms, methods, tools, technologies for developing creative activity, the possession of strong methodological knowledge (Ministry of Education and Science of Ukraine, 2014).

The productive and activity component of creativity is understood as a set of intellectual, productive, practical, organizational skills that satisfy the process of developing the creative activity. The component is made up by a system of strong, conscious practical actions and skills aimed at developing educators' own and students' creativity, the ability to transfer them to new unusual situations, the ability to generate creative ideas for finding solutions, create unusual ways and means to solve them, possessing skills to analyze and synthesize statements, use information and communication technologies in the educational process, etc (Kowang et al., 2018; Burchak, 2020).

The fourth component of creative activity is defined by the authors as reflexive. In general, this component includes critical thinking, the ability to self-analyze own activities, self-assessment of the readiness and accordance of the obtained professional activities results with the planned ones, the ability to make adjustments in developing creativity, realise the

mistakes, and ways to eliminate them, the ability to self-education, efficiently use own time, enrich the mental experience.

Methodology

Research Design

In the study, experts were asked to indicate the each indicator rank from 1 to 10. Where 1 was the most important and 10 was the least important. If the expert believes that the indicators have the same value, he puts the arithmetic average of the indicators. In case if two indicators, according to the expert, take the first place, both of they were given a rank of 1.5.

The Oleksandr Dovzhenko Hlukhiv National Pedagogical University, Sumy State Pedagogical University after A.S. Makarenko, Pavlo Tychyna Uman State Pedagogical University, Hryhoriy Skovoroda Pereyaslav-Khmelnytsky State Pedagogical University, Drahomanov National Pedagogical University (Kyiv), Ivan Franko Drohobych State Pedagogical University, and Sumy Regional Institute of Postgraduate Pedagogical Education have been involved in the research. All the institutions provide approximately similar approach in training future specialities, carry out professional training of teachers, and include departments of the same profile.

The lists of expert assessment of the importance of the components (motivational and volitional, cognitive, productive and activity, reflexive) of educators' creative activity, selected on the basis of the analysis of the psychological and pedagogical literature and works of outstanding scientists were developed by Burchak (2020); Lucenko et al. (2020). The experts had to rank them according to their degree of importance (Table 1).

Table 1. Constituents of Educator's Creative Activities

No	Elements of the content constituents
1	Image-adaptive flexibility as the ability to change the form of the stimulus
2	Motivation and willingness to innovations in the professional activities, accepting their own creative potential, behaviour stimuli as a life value and personal meaningful feature

3	Self-confidence, persistence, awaring the importance of developing own creativity in the professional activities
4	Ability to anticipate, communication skills, ability to make non-standard decisions, intuition, ability to transformations, imagination and fantasy
5	Ability to motivate the others' creative activity
6	Interests, inclinations, personality qualities (attention, memory, imagination, activity, initiative, curiosity, diligence, etc.), the need for self-realising, self-developing, self-improving
7	Motivation to focusing on creative work
8	Accepting own creative abilities as life value, stimuli of behaviour and activity, including professional, personal significant quality, psychological motivation and readiness for innovations in the professional activity
9	Willingness to overcome internal motivation, to resist the opinion of the others
10	The system of strong, conscious practical actions and skills aimed at develop educators' and students' creative activity, the ability to transfer them to new non-standard situations
11	Ability to plan their actions, draw conclusions and make general conclusions
12	Ideas on the content, forms of independent work, ability to pedagogical creative activity
13	Ability to solve problems, in other words, the ability to analyse and synthesise
14	Empathy, the richness of emotional experience
16	Possessing sensitivity to the lack of knowledge
17	Ability to plan actions, draw conclusions, make general conclusions on the professional issues, including developing students' creativity, forming the sound creative position.
18	Ability to generate creative ideas for finding solutions to problems, create unusual ways and means of solving them
19	Ability to distinguish personalities showing flexibility in solving problems, as well as the ability to think over a variety of ideas
20	Producing various ideas in an unregulated situation, the ability to quickly switch from one idea to another, realising the contradictions and uncertainties
21	Sensitivity to problems in the environment, the ability to develop hypotheses, demonstrate independence of judgment
22	Possessing knowledge of forms, methods, means, technologies of developing educators' own and students' creativity
23	Ability to wonder, to overcome obstacles, to take justified risks
24	Intuitiveness and the environment
25	Formation of educational achievements in the set of psychological, pedagogical and professional subjects
26	Divergence of opinion (number of ideas that arise per time unit)
27	Availability of skills to analyse and synthesise statements, use information and communication technologies in the educational process
28	Ability to make logical connections between events, willingness to work in the new context, inclination to associative thinking, ability to analyse and synthesise statements
29	Ability to make adjustments to the process of developing creative activities, to see mistakes and ways to eliminate them
30	Self-understanding, freedom of spirit
31	Possessing strong methodological knowledge
32	Developed "I-concept"
33	Focusing on innovation and the ability to be aware of own experience
34	Enriching mental experience, ability to self-analysis of own activity, self-assessing the readiness and corresponding the obtained results of the professional activities to the

	planned ones
35	The desire to express own inner world
36	Ability to self-educational activities in the process of creative development, productive use of own time, enrich mental experience
37	Unreality as the logical independence of the reaction from the stimulus
38	Fantasy as a complete separation of the response and reality with the presence of the logical connection between the stimulus and the reaction
39	Critical thinking, the ability to self-analysing own activities, self-assessing own readiness and corresponding the obtained results of the professional activities to the planned ones

In the process of ranking it was necessary to put to the first places the components that, according to experts, are the most important for the educator's personality. Accordingly, minor elements should occupy the last places in the ranking list, and the same rank is given to the equal importance components.

The expert group included university teachers of the above mentioned institutions of higher education. During the selection of experts, we met the following requirements for members of the expert group: experience in practical work in the education system; satisfactory state of physical and mental health (absence of irritability, pessimism, insincerity); confidence in one's own judgments, adherence to moral principles; intellectual productivity; possessing a sense of social responsibility (Jackson, 2014).

We determine the consistency of experts' opinions regarding the ranking of content elements by calculating the concordance coefficient proposed by Kendell and Smith. The coefficient was calculated by formula (1):

$$W = \frac{12S}{m^2(n^3 - n)}, \quad (1)$$

where S can be calculated as (2):

$$S = \sum_{j=1}^n \left(\sum_{i=1}^m - \frac{\sum_{j=1}^n \sum_{i=1}^m x_{ij}}{n} \right)^2, \quad (2)$$

where m was the number of experts and n is the number of creative abilities.

The calculation of S was possible according to the formula (3):

$$d = \sum x_{ij} - \frac{\sum \sum x_{ij}}{n} = \sum x_{ij} - 20 \quad (3)$$

Results

To determine the system of abilities that positively affect the process of the development of teachers creativity, professional training of higher education students to creative teaching, the personal creative qualities of teachers were determined that dominate scientific researches and really have pedagogical and psychological impact on teachers' professional activities.

Applying the scientific method of expert evaluation, we can reveal in more detail the essence of the educators' creativity components and their content.

The first component was *the motivational and volitional*. The list of personality's dominant creative qualities making up the educators' creativity motivational and volitional component obtained as a result of the analysis of views of scientists on the structure of creative activity should be reminded (Table 2).

Table 2. Content of Creativity Motivational and Volitional Components

No.	Component content elements	Authors
1.	Images-adaptive flexibility as the ability to change the form of the stimulus	3
2.	Unreality as the logical independence of the reaction from the stimulus	2
3.	Fantasy as a complete separation of the response and reality with the	2

	presence of the logical connection between the stimulus and the reaction	
4.	Self-confidence, persistence, awaring the importance of developing own creativity in the professional activities	5
5.	Ability to motivate the others' creative activity, to be a leader	3
6.	Interests, inclinations, personality qualities (attention, memory, imagination, activity, initiative, curiosity, diligence, etc.), the need for self-realising, self-developing, self-improving	5
7.	Motivation and readiness to innovations in the professional activity, accepting own creative abilities, behaviour stimuli as life value, personal significant quality	6
8.	Willingness to overcome internal motivation, to resist the opinion of others	4

The experts selected three main content elements of the component that include follow items:

– interests, inclinations, personality qualities (attention, memory, imagination, activity, initiative, curiosity, diligence, etc.), the need for self-realising, self-developing, and self-improving (X1);

– self-confidence, persistence, and awareness of the importance of developing own creativity in the professional activities (X2);

– motivation and readiness to innovations in the professional activity, accepting own creative abilities, behavior stimuli as life value, and personal significant quality (X3).

Obtained results of the experts' evaluation of the content elements in the motivational and volitional components of creativity have been organized in the Table 3.

Table 3. Matrix of Content Elements Ranking Results of Intending Teachers' Motivational and Volitional Components

The number of the expert	Content elements			Total
	X1	X2	X3	
1	1	2	3	6
2	2	1	3	6
3	1	2	3	6
4	1	2	3	6
5	2	1	3	6
6	1	3	2	6
7	1	2	3	6
8	1	2	3	6
9	3	1	2	6
10	1	3	2	6
Total	14	19	27	60

Place	1	2	3	-
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Analysis of the data in Table 3 shows that the expert commission obtained relatively reliable data as a result of their work: the difference between the smallest and largest sum of rankings is 13 (the smaller the difference, the less reliable of the obtained results were).

The ranking matrix looks as follows (Table 4).

Table 4. Matrix of Rankings

Content Elements	Experts										Rankings Sum	d	d ²
	1	2	3	4	5	6	7	8	9	10			
X ₁	1	2	1	1	2	1	1	1	3	1	14	-6	36
X ₂	2	1	2	2	1	3	2	2	1	3	19	-1	1
X ₃	3	3	3	3	3	2	3	3	2	2	27	7	49
Total	6	6	6	6	6	6	6	6	6	6	60		86

In this case, d was calculated by the formula (3). Checking the correctness of compiling the matrix based on the calculation of the checksum:

$$\sum x_{ij} = \frac{(1+n)n}{2} = \frac{(1+3) \cdot 3}{2} = 6$$

The sum of the matrix columns and the checksum are equal to each other. So, no mistakes were made when compiling the matrix. Analyzing the significance of the studied components of the motivational component constituent we have got the results (Table 5).

Table 5. Placing the Content Elements of the Motivational and Volitional Component According to Their Importance

Content elements	X ₁	X ₂	X ₃
Rankings sum	14	19	27

The consistency of experts' opinions on the content elements rankings was determined by calculating the concordance coefficient suggested by Kendell and Smith (Trabajo-Rite & Cuenca-López, 2020). The coefficient was calculated by the formulas (1) and (2).

In our case $S = 86$; $n = 3$; $m = 10$. Then: $W = \frac{12 \cdot 86}{10^2(3^3-3)} = 0.4300$.

Concordance coefficient $W = 0.4300$ means that the agreement of the experts is of medium degree as the continuum of values of the concordance coefficient is in the range from 0 to 1: at the complete disagreement of the experts $W = 0$; at the full unity of experts' opinions $W = 1$. Therefore, by the value of the concordance coefficient W it could be concluded that the opinions of the experts were sufficiently consistent. To assess the significance of the concordance coefficient W , we used the Pearson agreement criterion, according to which:

$$\chi^2 = \frac{12S}{mn(n+1)} = n(m-1)W$$

In our case: $\chi^2 = 3(10 - 1) \cdot 0.4300 = 11.61$. Comparing the obtained χ^2 with the tabular value for the number of degrees of freedom $k = n-1 = 3-1 = 2$ at the level of significance $\alpha = 0.05$, it should be noted that the obtained $\chi^2 = 11.61$, while the tabular is 5.99 . In our case, it was $\chi^2 > 5.99$. It means that $W = 0.430$ is not a random variable, and therefore the results are logical, correct and can be used in the further research.

Discussion

Agreeing with the thoughts of the scientists (Kuhn, 2000; Stojanova, 2010) and others it can be stated that the content elements of the components of educators' creativity of teachers always differ in their importance and diagnostic ability. This means that among the suggested list there are both dominant ones, less significant ones, and there are very few significant ones that can be neglected in the research. The results of ranking the content elements of the motivational and volitional component of creativity we have presented at the figure 1.

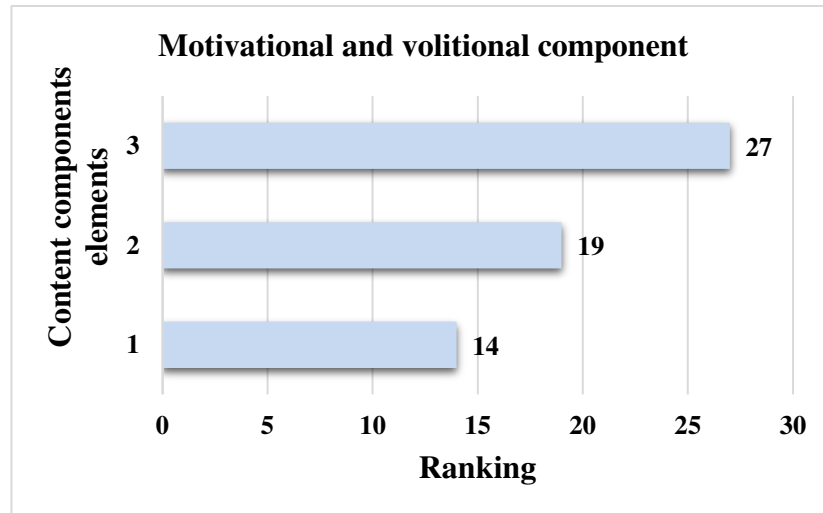


Figure 1. Results of Ranking the Content Components of the Motivational and Volitional Component of Educators' Creative Activities

Based on the opinion of the expert group the elements of the content of the motivational and volitional component of educators' creativity were determined:

- 1) interests, inclinations, personality qualities (attention, memory, imagination, activity, initiative, curiosity, diligence, etc.), the need for self-realizing, self-developing, self-improving (X1);
- 2) self-confidence, perseverance, awareness of the importance of developing own creative activity in the professional activities (X2);
- 3) motivation and readiness for innovations in the professional activity, accepting own creative abilities, behavior stimuli as life value, personal significant feature (X3).

Similarly, the results of the expert group to determine the content elements of the next three components of creativity (cognitive, productive and activity, reflexive) of educators (Figures 2–4) were obtained.

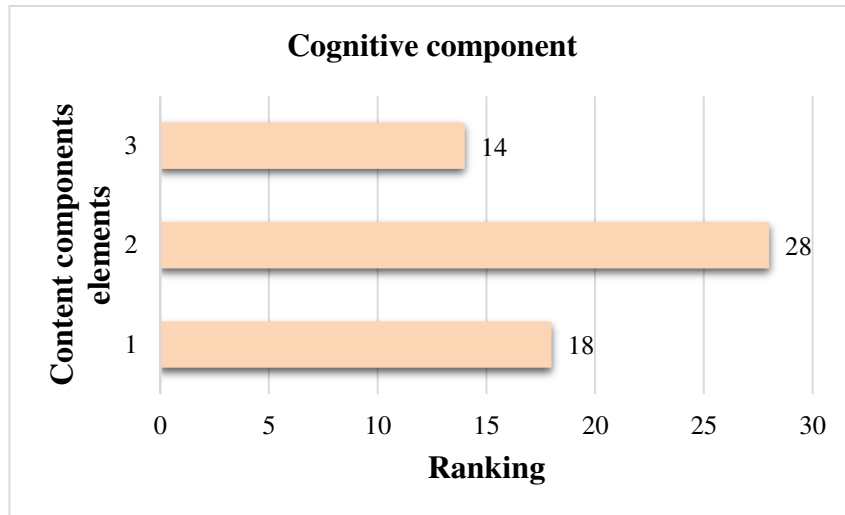


Figure 2. Results of Ranking the Content Constituents of the Cognitive Component of Educators' Creative Activities

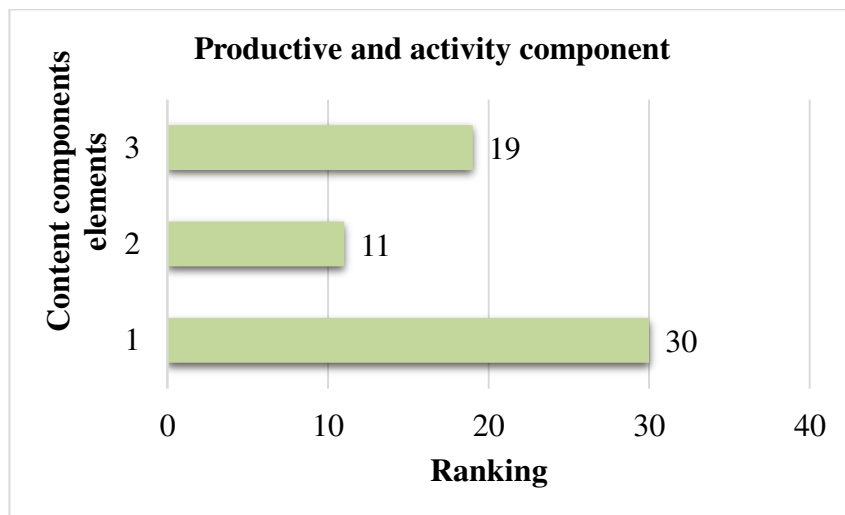


Figure 3. Results of Ranking the Content Constituents of the Productive and Activity Component of Educators' Creative Activities

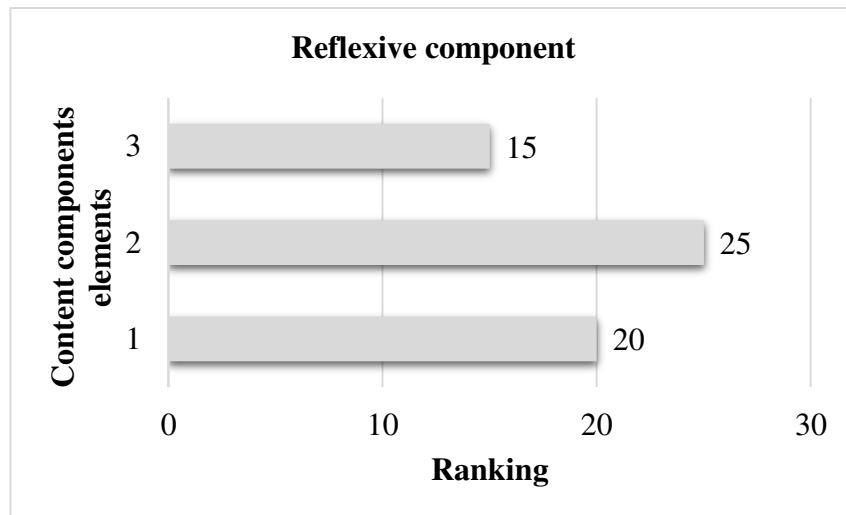


Figure 4. Results of Ranking the Content Constituents of the Reflexive Component of Educators' Creative Activities

And the content of the components of educator's creative activities was got (Figure 5).

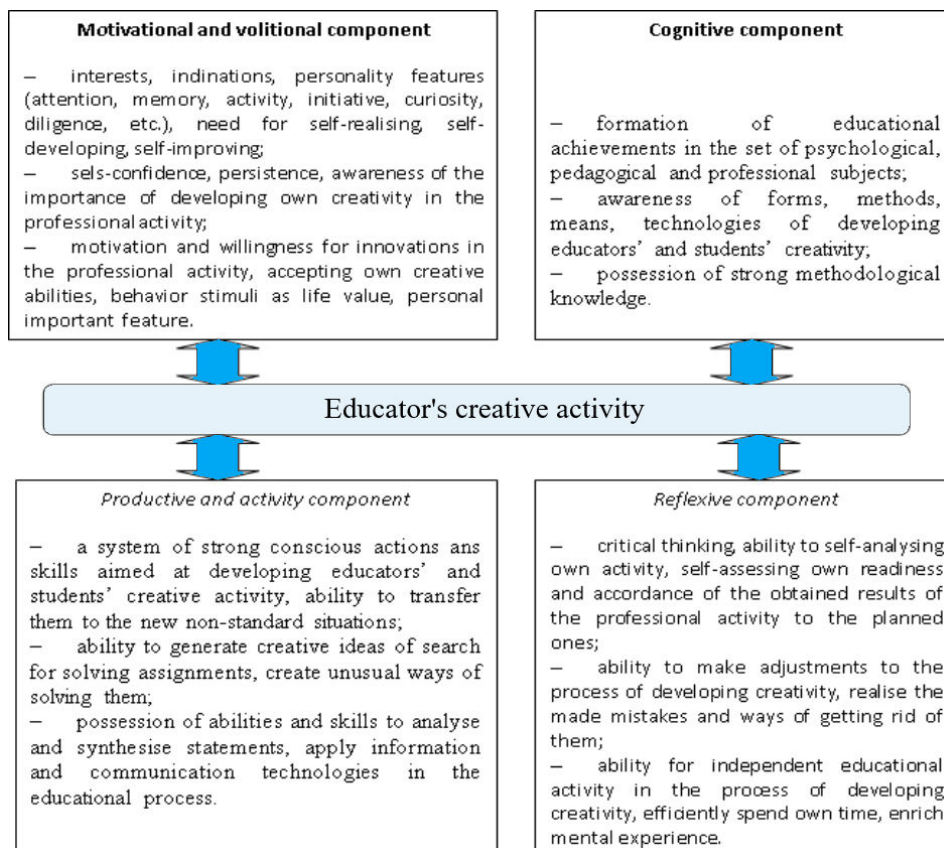


Figure 5. The Structure of Educators' Creative Activities

Characterizing the components of intending teachers' creative activity the importance of social and psychological factors should be noted, including internal and external motivation, which was stressed by Amabile (1996). According to the author, it is the intrinsic motivation that should be the basis of creative processes. The external motivation in some cases is a destabilizing and destructive factor. The psychologist states that an influential indicator of creative activity is the personality's activity which is both new and adequate to the knowledge; if the assignment or the problem cannot be solved by any known algorithm, it must be of the heuristic nature (Tari & Rosana, 2019; Lestari et al., 2021).

It should be noted that the identified educators' creativity components interconnected, interdependent, and interrelated. Thus, the motivational and volitional component of creativity contained creative talents (basis for creativity) and motivation for activity which are the basis of the cognitive and productive and activity components, it determines reflexive one, as educators' full creative activity is the expected result of such process.

Conclusion

Educators' creative activity is interpreted as an integrative property of their personality, based on hereditary, innate inclinations of the person to creative activity, actions and behavioral manifestations, enabling the ability of a specialist to qualified innovative pedagogical activity based on the methodological and professional knowledge, skills, needs, motives, cognitive processes (attention, memory, and imagination) and personaloty's qualities (activity, initiative, curiosity, and diligence), readiness for creative self-improving and self-developing in the process of performing their professional duties.

We consider educators' creative activity as a complex system of the interconnected components (motivational and volitional, cognitive, productive and activity, reflexive).

Educators' creative activity components characterized by the authors and selected by the experts group have the following content, namely: *motivational and volitional* (interests, inclinations, personality qualities (attention, memory, imagination, activity, initiative, curiosity, diligence), the need for self-realising, self-developing, self-improving; self-confidence, persistence, awaring the importance of developing their own creativity in their professional activities; motivation and willingness to innovate in their professional activities, accepting their own creative potential, behaviour stimuli as a life value, personality's important feature); *cognitive* (formation of the educational achievements in a set of the psychological, pedagogical and professional subjects; possessing knowledge of forms, methods, tools, technologies for developing educators' own and students' creativity; possession of strong methodological knowledge);

productive and activity (a system of strong, conscious practical actions and skills aimed at developing their own and students' creative activity, ability to transfer them to new unusual situations; the ability to generate creative ideas for finding solutions to problems, create unusual ways and means of solving them; ability to analyze and synthesize statements, use information and communication technologies in the educational process); *reflexive* (critical thinking, ability to self-analysis of their own activities, self-assessment of their readiness and compliance of the obtained results of the professional activities with the planned ones; ability to make adjustments in developing creativity, realise mistakes and ways to eliminate them; ability to self-educational activities in developing creativity, productively use their own time, enrich mental experience).

Recommendations

Creativity of a pedagogical worker is an integrative property of the individual. It is based on the subject's hereditary, inborn inclinations to creative activity, actions and behavioral manifestations, enables the specialist's ability to perform qualified innovative pedagogical

activities. Also, creativity involves methodological and professional knowledge, skills, needs, motives, cognitive processes and personal qualities (activity, initiative, inquisitiveness, diligence), readiness for creative self-improvement and self-development in the process of fulfilling professional duties. This personality property includes a system of interrelated components (motivational-volitional, cognitive, productive-active, reflective).

Limitations

The characterized components of teachers' creativity include motivational and volitional; cognitive; productive and active; reflexive component constituents. The results of the study made it possible to determine prognostic trends in the training of future teachers regarding the development of their creativity. We see prospects for further exploration in the search and development of new effective creative methods, means, and technologies for the development of creativity of future teachers, taking into account interdisciplinary integration.

Conflict of Interest

There is no conflict of interest in the presented research.

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References

- Amabile, T. (1996). *Creativity and Innovation in Organizations*. Harvard Business School Background, pp. 239–396. https://edisciplinas.usp.br/pluginfile.php/4927750/mod_resource/content/0/Creativity%20and%20Innovation%20in%20Organizations.pdf
- Edens, D., Dy, H., Dalske, J. & Strain, C. (2015). Cognitive Skills Development Among Transfer College Students: An Analysis by Student Gender and Race. *Journal of Education and Training*, 2, 117–135. <https://doi.org/10.5296/jet.v2i2.7227>

- ESSnet-CULTURE. (2012). *European Statistical System Network on Culture*. Final report. Luxembourg, pp. 14-460. https://ec.europa.eu/assets/eac/culture/library/reports/ess-net-report_en.pdf
- European University Association. (2007). *Convention on Europe's Universities beyond 2010 – Diversity with a Common Purpose. Trends V report: Draft Executive Summary*. Lisbon, Portugal, 1-6. https://www.ehea.info/media.ehea.info/file/EUA_Convention_Lisbon_2007/74/8/TRENDS_V_Executive_Summary_582748.pdf
- Jackson, N. (2014). Developing students' creativity through a higher education. In *International Symposium on 'The Cultivation of Creativity in University Students* (pp. 1-33). <http://www.normanjackson.co.uk/creativity.html>
- Kaplan, D. E. (2019). Creativity in education: Teaching for creativity development. *Psychology*, 10(2), 140-147. <https://doi.org/10.4236/psych.2019.102012>
- Khamzina, S. S., Utilova, A. M., Shakenova, T. Z., Suleimenova, G. A., Sarsembayeva, E. Y., & Bobizoda, G. M. (2020). Fashioning of students' research competence through technology of project activities. *Journal of Intellectual Disability-Diagnosis and Treatment*, 8(3), 307-311. <https://doi.org/10.6000/2292-2598.2020.08.03.6>
- Kowang, T. O., Albakri, K. B. M., Yew, L. K., Fei, G. C., & Long, C. S. (2018). Characteristics of creative students versus academic performance. *International Journal of Human Resource Studies*, 8(2), 69-79. <https://doi.org/10.5296/ijhrs.v8i2.12718>
- Kuhn, D., Black, J., Keselman, A., & Kaplan, D. (2000). The development of cognitive skills to support inquiry learning. *Cognition and instruction*, 18(4), 495-523. https://doi.org/10.1207/S1532690XCI1804_3
- Kurok, V., Tkachenko, N., Burchak, S., Kurok, R. & Burchak L. (2022). Developing Intending Teachers' Creativity in the Process of Their Professional Training in the Context of Educational Transformations. *Revista Romaneasca pentru Educatie Multidimensionala*, 14(1), 246-262. <https://doi.org/10.18662/rrem/14.1>
- Lestari, F. P., Ahmadi, F., & Rochmad, R. (2021). The Implementation of Mathematics Comic through Contextual Teaching and Learning to Improve Critical Thinking Ability and Character. *European Journal of Educational Research*, 10(1), 497-508. <https://doi.org/10.12973/eu-jer.10.1.497>

- Lucenko, G., Kuzminskyi, A., & Burchak, S. (2020). Organising the Process of Physics Students' Cognitive Activity. *Universal Journal of Educational Research*, 8(8), 3449-3458. <https://doi.org/10.13189/ujer.2020.080819>
- Marieiev, D., Marieieva T., Yaroshevska, L., Kaminsky, V., & Viesova, O. (2023). Modern Teacher Education in Ukraine and EU Countries: Transformation, Vectors of Development. *Journal of Higher Education Theory and Practice*, 23(5), 227-236. <https://doi.org/10.33423/jhetp.v23i5.5947>
- Ministry of Education and Science of Ukraine. (01.10.2012). Положення про електронні освітні ресурси. Наказ № 1060. [Regulations on electronic educational resources. Order No. 1060]. <http://zakon0.rada.gov.ua/laws/show/z1695-12>
- Ministry of Education and Science of Ukraine. (26.12.2014). Положення про організацію навчального процесу у вищих навчальних закладах. Наказ № 161 [Regulation on the organization of the educational process in higher educational institutions. Order No. 161]. <https://zakon.rada.gov.ua/laws/show/z0173-93#Text>
- Nixon, N. (2020). *The Creativity Leap: Unleash Curiosity, Improvisation, and Intuition at Work*. Berrett-Koehler Publishers, pp. 13-22.
- Nurbekova, Z. K., Mukhamediyeva, K. M., Davletova, A. H., & Kasymova, A. H. (2018). Methodological system of educational robotics training: Systematic literature review. *Espacios*, 39(15), 28-28. <https://www.revistaespacios.com/a18v39n15/a18v39n15p28.pdf>
- Przyborowska, B., & Błajet, P. (2020). The Importance of Place in Creative Activity - a Proposal for an Integral Approach. *Creativity. Theories–Research–Applications*, 7(1), 27-37. <https://doi.org/10.2478/ctra-2020-0002>
- Stojanova, B. (2010). Development of creativity as a basic task of the modern educational system. *Procedia-Social and Behavioral Sciences*, 2(2), 3395-3400. <https://doi.org/10.1016/j.sbspro.2010.03.522>
- Tari, D. K., & Rosana, D. (2019). Contextual teaching and learning to develop critical thinking and practical skills. In *Journal of Physics: Conference Series* (Vol. 1233, No. 1, p. 012102). IOP Publishing. <https://doi.org/10.1088/1742-6596/1233/1/012102>

- Trabajo-Rite, M., & Cuenca-López, J. M. (2020). Student concepts after a didactic experiment in heritage education. *Sustainability*, 12(7), Article 3046. <https://doi.org/10.3390/su12073046>
- Закон України «Про вищу освіту» № 1556-VII [Law of Ukraine “On High Education” No. 1556-VII]. (27.12.2023). *Verkhovna Rada information/ Відомості Верховної Ради*, (37-38), 2004. <https://zakon.rada.gov.ua/laws/show/1556-18#Text>
- Закон України «Про освіту» № 2145-VIII [Law of Ukraine “On Education” No. 2145-VIII]. (04.01.2024). *Verkhovna Rada information/ Відомості Верховної Ради*, (38-39), 380. <https://zakon.rada.gov.ua/laws/show/2145-19#Text>
- Zadorina, O., Burchak, L., Panas, O., Ardelian, O., & Apalat, H. (2023). Shaping the Competencies of the Future: The Importance of Developing Soft Skills in Higher Education. *Cadernos de Educação Tecnologia e Sociedade*, 16(2), 361-371. <https://doi.org/10.14571/brajets.v16.n2.361-371>
- Bussieres, E.-L., St-Germain, A., Dube, M., & Richard, M.-C. (2017). Efficacite et efficience des programmes de transition a la vie adulte: Une revue systematique [Effectiveness and efficiency of adult transition programs: A systematic review]. *Canadian Psychology/ Psychologie canadienne*, 58(1), 354–365. <https://doi.org/10.1037/cap0000104>