THE INFLUENCE OF THE PEDAGOGICAL TECHNOLOGY FOR MOTIVATION DEVELOPMENT ON THE VALUE SELF-DETERMINATION OF STUDENTS WITH A HIGH LEVEL OF CREATIVE THINKING

A INFLUÊNCIA DA TECNOLOGIA PEDAGÓGICA PARA O DESENVOLVIMENTO DA MOTIVAÇÃO NA AUTODETERMINAÇÃO DE VALOR DE ALUNOS COM ALTO NÍVEL DE PENSAMENTO CRIATIVO

LA INFLUENCIA DE LA TECNOLOGÍA PEDAGÓGICA PARA EL DESARROLLO DE LA MOTIVACIÓN EN EL VALOR DE LA AUTODETERMINACIÓN DE ESTUDIANTES CON UN ALTO NIVEL DE PENSAMIENTO CREATIVO

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ABSTRACT: Contemporary education in Russia is faced with the task of introducing a humane approach in the training of a future specialist capable of adapting to changing living conditions. The aim of the paper in this perspective was to substantiate theoretically and study empirically the relationship between the value-motivational sphere of the personality and creative thinking of a young person. A theoretical analysis of works devoted to a creative approach in education has shown that internal motivation for educational activities is combined with motivation for a creative approach in solving educational problems. As a result of the experimental study, a significant relationship was revealed between the significance of the value of spirituality and an increase in the integral indicator of the creative thinking level, which indicates the orientation of a creative person to the search for inner harmony and their own destiny among young people.

KEYWORDS: Pedagogical technologies. Education. Internal motivation. Value self-determination. Creative thinking. Youth.

***RESUMO**: A educação contemporânea na Rússia se depara com a tarefa de introduzir uma abordagem humana na formação de um futuro especialista capaz de se adaptar às mudanças nas condições de vida. O objetivo do artigo, nesta perspectiva, foi fundamentar teoricamente e estudar empiricamente a relação entre a esfera valor-motivacional da personalidade e o pensamento criativo de um jovem. Uma análise teórica de trabalhos dedicados a uma abordagem criativa na educação mostrou que a motivação interna para as atividades educativas se combina com a motivação para uma abordagem criativa na resolução de problemas educacionais. Como resultado do estudo experimental, foi revelada uma relação significativa entre o significado do valor da espiritualidade e um aumento no indicador integral do nível de pensamento criativo, que indica a orientação de uma pessoa criativa para a busca de harmonia interior e seu próprio destino entre os jovens.*

***PALAVRAS-CHAVE**: Tecnologias pedagógicas. Educação. Motivação interna. Autodeterminação de valores. Pensamento criativo. Juventude.*

***RESUMEN**: La educación contemporánea en Rusia se enfrenta a la tarea de introducir un enfoque humano en la formación de un futuro especialista capaz de adaptarse a las cambiantes condiciones de vida. El objetivo del trabajo en esta perspectiva fue fundamentar teóricamente y estudiar empíricamente la relación entre la esfera valor-motivacional de la personalidad y el pensamiento creativo de un joven. Un análisis teórico de trabajos dedicados a un enfoque creativo en la educación ha demostrado que la motivación interna para las actividades educativas se combina con la motivación para un enfoque creativo en la resolución de problemas educativos. Como resultado del estudio experimental, se reveló una relación significativa entre la trascendencia del valor de la espiritualidad y un aumento en el indicador integral del nivel de pensamiento creativo, que indica la orientación de una persona creativa a la búsqueda de la armonía interior y su propio destino entre los jóvenes.*

***PALABRAS CLAVE**: Tecnologías pedagógicas. Educación. Motivación interna. Autodeterminación de valores. Pensamiento creativo. Juventud.*

Introduction

The social institution of higher education in contemporary Russia is increasingly characterized by a desire for the introduction of such a pedagogical process, the purpose of which is to shape up a harmoniously developed personality of a young person. This tendency explains striving for incorporating a humanistic approach into the pedagogical technologies of higher professional education, which implies, along with the acquisition of knowledge by students, also embedding moral education in the educational process based on value principles (MACKAY *et al.*, 2021). All this is determined by the fact that a university graduate, as a result, is a person capable of adapting to the requirements of contemporary society, and, accordingly, to the value-normative system adopted in this society.

At the same time, the internalization of social values by an individual is a long, multi-stage process, which completes its final stage in the age of youth, which makes it important for the formation of a harmonious person (LUNEVA *et al.*, 2020). The main personal new constructs of this age period are the formed self-concept, self-esteem, the system of value orientations that harmonize human relations to oneself, to the people around, to society as a whole (PURVIS; RODGERS; BECKINGHAM, 2020). At the same time, as R. Cover (2021) from Australia notes, the transformation of value self-determination can lead to both increased self-esteem and lower self-esteem. Regarding the educational process of a higher education institution, the formation of the value foundations of the student's personality as a future specialist who can work effectively in the contemporary world is precisely characterized by the humanization of the educational and upbringing process.

Conversely, modern scientific and technological progress is characterized by continuous innovations and reaches such a level that requires a specialist to pursue continuous development, and, accordingly, continuous professional and personal growth. In turn, pedagogy currently provides opportunities for young people, using which they will be able to meet the requirements of modern society completely, although it is worth noting the diminishing humanitarian component of higher education, which can have a negative effect on the innovative component of the educational process (REZNICHENKO *et al.*, 2018; MERZLYAKOVA; GOLUBEVA; BIBARSOVA, 2020; RIKEL, 2020). Indeed, as noted by a group of scientists from High Point University (USA), choosing the right pedagogy is the first step towards the correct mastery of knowledge by a student (SAHAGUN *et al.*, 2021).

In this context, the formation of a system of value orientations of a young person's personality, obviously, requires the use of a systematic approach. This is associated with the

fact that social, socio-psychological, and psychological-pedagogical relations of the individual are interconnected in the value-normative system. The core of such relations is the comprehension of one's life goal, the formation of a worldview, and orientation in one's own life. The implementation of a systematic approach makes it possible, therefore, to unlock the spiritual and creative potential of a young person's personality. The required pedagogical conditions for the implementation of this task can be a methodological foundation, with emphasis on the creative formation of the individual's personality, and therefore on the development of creative thinking (SHMELEVA, 2020; MASALIMOVA *et al.*, 2017; SHAKIROVA; VALEEVA, 2016; GAFUROV; VALEEVA; KALIMULLIN, 2019).

The phenomenon of creative thinking is a complex of manifestations, which explains many approaches and theories to its definition. On the one hand, creative thinking, is associated, first of all, with the development of abilities and a high level of giftedness, on the other hand, it is associated with creativity as a type of activity. In any case, the problem of creative thinking acts as a problem of a specially structured teaching, and, in this sense, with all theoretical and terminological difficulties, determines a special approach to the educational process (LOKHMAN; ROGOZHINA; RODINA, 2017).

As it was mentioned earlier, foreign and domestic scientific developments on creative thinking are represented by a complex of theories and approaches. First of all, creative thinking is considered as a specific intellectual activity, at the same time, it is understood as a special type of giftedness, and, in addition, as a prerequisite for special forms of activity, such as scientific activity, activity in the field of art, etc. In addition, some scientists define creative thinking as divergent, especially productive, hypothetical etc. (ABDULAEVA, 2019; EFIMOVA, 2020; KARKINA *et al.*, 2021). However, in our opinion, synthetic theories disclose the essence of this phenomenon more comprehensively. Among such theories it is worth paying attention to the theory proposed by A. Newell, H. A. Simon and J. C. Shaw (1981) that view creative thinking as the highest form of thinking in general. At the same time, they disclose such properties of creative thinking as high stability, high emotionality, and high motivation for mental activity.

This approach to the consideration of creative thinking is consistent with the problem of value self-determination of young people in the framework of the educational process, the goal of which is to shape up the harmonious personality of a future specialist. And it reveals new opportunities for solving pedagogical problems of constant innovative development of the personality of youth, since it allows one to approach the acquisition of new knowledge by a person not only from purely formal positions, but also opening the way for motivational systems

(ZEYNALOV; POPOVA, 2017). In this regard, it is worth noting many developments of contemporary domestic and foreign scientists working in this field of science.

Many studies on creative thinking emphasize that creative individuals are more open to new experiences that open new opportunities and increase interest in knowledge, raising the significance of their own achievements, relationships with others, and interaction with nature and society. In this regard, a group of scientists from the United States, A. S. Ditta *et al.* (2020), note that openness to information increases motivation to learn, and an international group of scientists from the USA, Australia, Portugal, Czech Republic, India, assert that creative people are more open to new experience, even despite the uncertainty of this experience (HENRIKSEN *et al.*, 2021). The use of such opportunities for creativity allows developing new pedagogical technologies that raise interest in new knowledge and personal growth. This principal approach, linking the features of creative thinking in high motivation for solving educational problems and value self-determination, expressed in the high significance of cognition, underlay the devised program of developing values in young people.

Methodological Framework

The program of values development was devised on the assumption that through the development of internal motivation for activity, the level of creative thinking increases. As part of the program, an analysis of the life path of young people was carried out, which was used to identify the personal characteristics of significant people associated with important events of young people. The method of repertory grids was used to achieve this, based on the theory of personality constructs proposed by J. Kelly (BELL, 2005), allowing young people to identify their systems of personal constructs, which represent the system of their most significant guidelines in their relationship with themselves, with other people, and the world, which, in fact, represent the system of value orientations of the personality of young people. In the framework of the program, young people, based on a series of theoretical and practical lessons, are invited to play the roles of internally motivated individuals, which allows them to gain new experience of personal development and increase motivation for creative activity. In this regard, the program is a pedagogical technology aimed at developing motivation for creative activity and allows one to explore the influence of motivational development on value self-determination and the relationship with creative thinking (VERSHININA; ILYUSHKINA, 2020; TUGUN *et al.*, 2020). All this is consistent with the sociocultural theory of creative self-determination, developed by scientists from Denmark V. P. Glaveanu and L. Tanggaard (2014)

who indicated the relationship between creative thinking and personal self-determination, expressed in relations to oneself, to others and to society. To test this thesis, it was proposed to conduct an experimental implementation of the values development program in student groups as part of the pedagogical process.

The experimental study was carried out at the Dimitrovgrad Institute of Engineering and Technology, an affiliate of the Moscow Engineering Physics Institute, in the city of Dimitrovgrad, the Ulyanovsk region (a similar experimental study by other researchers (MAKHNACH; DIKAYA, 2016)). The study embraced 60 students at the age of 20 - 21. The control and experimental groups were formed by a homogeneous gender and age composition, 15 boys and 15 girls each. As a diagnostic tool, S. Schwartz's (2012) Value Questionnaire was used, which makes it possible to identify the most important value-motivational domains of young people's personality and Williams test, aimed at measuring the cognitive component associated with creativity (TUNIK, 2003). Factor analysis was used to analyze empirical data, implemented in the Statistics 13.0 program, the principal component method was used, followed by the Varimax procedure and data normalization (OSHCHEPKOV; OVSYANIK; SALAKHOVA, 2017; OSHCHEPKOV; FRIAUF, 2020a).

Results

To analyze the dynamics of changes in the indicators of values and creative thinking, a comparative analysis was carried out using the statistical Student's t-test. This analysis showed that in the control group of boys and girls, statistical differences in indicators before and after the experiment were not found (OSHCHEPKOV; FRIAUF, 2020b) (Table 1).

Table 1 – The comparison of values and creative thinking indicators in the control groups of boys and girls before and after the experiment using the Student's t-test

Names of variables	Boys			Girls		
	before	after	$t_{emp.}$	before	after	$t_{emp.}$
Values						
Enjoyment	4.3305	4.3307	0.0001	3.5212	3.0021	0.5112
Achievements	4.9312	4.9311	0.0001	2.4515	2.3212	0.1652
Social power	4.4211	4.4198	0.0003	1.7912	2.2118	0.5514
Self-determination	4.9416	4.9410	0.0002	2.9405	3.1123	0.1618
Stimulation	4.5608	4.5600	0.0002	2.0785	1.9614	0.1915
Conformism	3.0811	3.0812	0.0001	2.9485	3.5211	0.5923
Support of traditions	3.0801	3.0799	0.0002	2.9415	3.3581	0.4112
Sociality	4.3312	4.3315	0.0002	3.0369	3.4578	0.3897
Security and safety	5.1101	5.1098	0.0003	3.5784	3.9116	0.2914

Maturity	5.2415	5.2416	0.0001	3.1954	3.5268	0.3331
Social culture	2.6714	2.6725	0.0005	2.1215	2.1654	0.0608
Spirituality	4.0789	4.0699	0.0010	2.7501	2.7502	0.0001
Creative thinking						
Fluency	1.0115	0.9415	0.5515	1.0001	0.9785	0.2756
Flexibility	0.5001	0.5025	0.1101	0.8415	0.7562	0.2212
Originality	1.9415	1.9352	0.1005	2.4415	2.3561	0.3565
Degree of development	1.2020	1.2056	0.0715	1.9154	2.1203	0.1025
Verbal creativity	2.0001	2.0002	0.0001	1.7118	1.7006	0.1007
Creative thinking level	3.3516	3.3501	0.1112	3.9156	3.8456	0.1457

* - significant differences at $\rho \leq 0.05$
** - significant differences at $\rho \leq 0.01$
Source: Devised by the authors

Nevertheless, as a result of a comparative analysis of the indicators of values and creative thinking in the experimental group before and after the experiment, statistically significant differences were found in the indices of values and creative thinking in both groups of boys and girls. In the sample of young men, the level of significance of the value of Enjoyment significantly increased (t_{emp} = 3.1551 at $\rho \leq 0.01$), and the levels of significance of the values of Conformism (t_{emp} = 4.2415 at $\rho \leq 0.01$), Support of Traditions (t_{emp} = 3.6845 at $\rho \leq 0.01$), Sociality (t_{emp} = 3.6689 at $\rho \leq 0.01$), Security and safety (t_{emp} = 2.6914 at $\rho \leq 0.05$), Maturity (t_{emp} = 2.6745 at $\rho \leq 0.05$), Social culture (t_{emp} = 3.2735 at $\rho \leq 0.01$). In the sample of girls, the level of significance of the value of Enjoyment significantly increased (t_{emp} = 2.7358 at $\rho \leq 0.05$), and the levels of significance of the values of Conformism (t_{emp} = 2,8214 at $\rho \leq 0.05$), Sociality (t_{emp} = 2.5878 at $\rho \leq 0.05$), Security and Safety (t_{emp} = 2.4857 at $\rho \leq 0.05$). According to the indicators of creative thinking in the sample of young men, there was a general increase in the levels of Fluency (t_{emp} = 2.6514 at $\rho \leq 0.05$), Flexibility (t_{emp} = 2.7932 at $\rho \leq 0.05$), Originality (t_{emp} = 2.8415 at $\rho \leq 0.05$), Degree of development (t_{emp} = 3.3687 at $\rho \leq 0.01$), Verbal creativity (t_{emp} = 2.9687 at $\rho \leq 0.05$), Integral level of creative thinking (t_{emp} = 2.3987 at $\rho \leq 0.05$). In the sample of girls, there was an increase in the levels of Flexibility (t_{emp} = 2.9455 at $\rho \leq 0.05$), Degree of development (t_{emp} = 2.9605 at $\rho \leq 0.05$), Verbal creativity (t_{emp} = 2.9541 at $\rho \leq 0.05$), The integral level of creative thinking (t_{emp} = 2.6879 at $\rho \leq 0.05$) (Table 2).

Table 2 – Comparison of indicators of values and creative thinking in experimental groups of boys and girls before and after the experiment using the Student's t-test

Names of variables	Boys			Girls		
	before	after	$t_{emp.}$	before	after	$t_{emp.}$
Values						
Enjoyment	4.0001	5.3302	**3.1551****	3.0587	4.1225	**2.7358***
Achievements	3.8798	4.4751	1.0445	4.2105	3.6789	1.0658
Social power	3.8351	4.1754	0.4312	3.3358	3.5898	0.4758
Self-determination	4.8345	4.5625	0.5002	4.6198	4.1158	0.6315
Stimulation	4.4489	3.7865	1.0359	4.8947	4.4485	0.8917
Conformism	4.0052	2.2145	**4.2415****	3.3345	2.0058	**2.8214***
Support of traditions	4.2595	2.6784	**3.6845****	3.5865	3.3312	0.3215
Sociality	4.7584	2.6715	**3.6689****	4.2158	2.9632	**2.5878***
Security and safety	5.2879	3.6781	**2.6914***	5.0612	3.8987	**2.4857***
Maturity	4.6218	3.1965	**2.6745***	4.6275	4.0003	1.0898
Social culture	3.7184	2.2965	**3.2735****	2.7618	2.3354	0.6389
Spirituality	4.0587	3.6594	0.6745	3.8791	3.6755	0.4965
Creative thinking						
Fluency	0.5618	0.9415	**2.6514***	0.8145	0.9768	0.7184
Flexibility	0.3589	0.7458	**2.7932***	0.6878	1.8997	**2.9455***
Originality	1.3156	2.1548	**2.8415***	1.9874	2.3654	0.8497
Degree of development	0.5121	1.4587	**3.3687****	0.9003	2.8765	**2.9605***
Verbal creativity	0.8456	1.5987	**2.9687***	0.9154	2.4556	**2.9541***
Creative thinking level	3.9589	4.8735	**2.3987***	2.5118	3.4421	**2.6879***

* - significant differences at $\rho \leq 0.05$
** - significant differences at $\rho \leq 0.01$
Source: Devised by the authors

As part of the factor analysis of the experimental research data, the interrelations were analyzed between the value indicators Enjoyment, Achievements, Social power, Self-determination, Stimulation, Conformism, Support of traditions, Sociality, Security and safety, Maturity, Social culture, and Spirituality, as well as indicators of creative thinking: Fluency, Flexibility, Originality, Degree of development, Verbal creativity, and an integral indicator of Creative thinking level. According to the results of the control group of boys and girls before and after the experiment, only one factor was identified, which positively combined the values of Enjoyment and Achievements (OSHCHEPKOV; SALAKHOVA; TSYNK, 2018) (Table 3).

Table 3 – Factorial matrix of the structures of interrelations between the system of value orientations and the level of creative thinking in the control groups of boys and girls, before and after the experimental study

Names of variables	Boys		Girls	
	Factor 1		Factor 1	
	before	after	before	after
Values				
Enjoyment	**0.9874**	**0.9901**	**0.9785**	**0.9812**
Achievements	**0.9847**	**0.9814**	**0.9915**	**0.9645**
Social power	0.1256	0.3125	0.1457	0.1156
Self-determination	0.1245	0.3256	0.1452	0.1422
Stimulation	0.0253	0.0354	0.0845	0.6589
Conformism	0.1156	0.6598	0.1854	0.1965
Support of traditions	0.0568	0.0453	0.0456	0.0568
Sociality	0.0854	0.0897	0.0987	0.0865
Security and safety	0.1897	0.1987	0.1565	0.1588
Maturity	0.1954	0.1955	0.1874	0.1897
Social culture	0.0687	0.0547	0.0987	0.0754
Spirituality	0.1598	0.1687	0.1754	0.1689
Creative thinking				
Fluency	0.1456	0.0569	0.1654	0.0789
Flexibility	0.1223	0.1145	0.1165	0.1245
Originality	0.0058	0.0098	0.0087	0.0056
Degree of development	0.1354	0.1355	0.1456	0.1397
Verbal creativity	0.1185	0.1198	0.0145	0.0565
Creative thinking level	0.1023	0.1025	0.1021	0.1087
Contribution to total variance, %	**87.52**	**88.98**	**87.05**	**89.56**

Source: Devised by the authors

At the same time, according to the factor analysis results, in the experimental groups of boys and girls before and after the experiment, it is important to note the fact that the initially identified factor, as well as in the control groups, which combined the values of Enjoyment and Achievements, was transformed into a factor that combined positively the values of Spirituality and the Integral indicator of creative thinking (OSHCHEPKOV; SALAKHOVA; TSYNK, 2018) (Table 4).

Table 4 – Factorial matrix of the structures of interrelations between the system of value orientations and the level of creative thinking in the experimental groups of boys and girls, before and after the experimental study

Names of variables	**Boys**		**Girls**	
	Factor 1		**Factor 1**	
	before	**after**	**before**	**after**
Values				
Enjoyment	**0.9745**	0.2465	**0.9874**	0.2365
Achievements	**0.9856**	0.2145	**0.9745**	0.2165
Social power	0.1221	0.3054	0.1354	0.1268
Self-determination	0.1165	0.2897	0.1565	0.1165
Stimulation	0.0235	0.0456	0.0745	0.0685
Conformism	0.1085	0.4565	0.1865	0.1755
Support of traditions	0.0457	0.0554	0.0551	0.0587
Sociality	0.0784	0.0785	0.0847	0.0865
Security and safety	0.1745	0.1832	0.1654	0.1688
Maturity	0.2154	0.2156	0.2201	0.2198
Social culture	0.0875	0.0652	0.0874	0.0852
Spirituality	0.1555	**0.9845**	0.1785	**0.9978**
Creative thinking				
Fluency	0.1324	0.0871	0.1222	0.1158
Flexibility	0.1354	0.2005	0.1232	0.1465
Originality	0.0005	0.0004	0.0003	0.0001
Degree of development	0.0087	0.0098	0.0015	0.0065
Verbal creativity	0.1201	0.1222	0.0987	0.0889
Creative thinking level	0.1124	**0.9758**	0.1098	**0.9989**
Contribution to total variance, %	**88.57**	**89.52**	**87.12**	**90.15**

Source: Devised by the authors

The features of the dynamics and interrelations between the systems of value orientations and indicators of creative thinking obtained as a result of comparative and factor analysis deserve a content-related analysis.

Discussion

The absence of changes in the dynamics of the significance of value systems and indicators of creative thinking in the control group of boys and girls is explained by the absence of socio-psychological factors affecting these groups; the activities of these groups took place under the conditions of a normal educational process. As far as the experimental groups are concerned, it can be said that the ongoing socio-pedagogical program influenced the observed dynamics of the significance of values and indicators of creative thinking. At the same time, the increase in the importance of the value of enjoyment can be explained by uncovering internal motivation, which is associated with a decrease in restrictions in one's own life, which also manifests itself in a decrease in the importance of normative-oriented values, such as the values of conformism, support of traditions, sociality, and social culture. At the same time, it

should be noted that both boys and girls of the experimental group have a decrease in the importance of the value of safety, which is also associated with a reorientation to a creative approach in life. In this aspect, the analysis of one's own values and their reorientation to internally motivated activity also significantly affects the cognitive component of activity, which is manifested in an increase in the level of the main indicators of creative thinking. At the same time, the girls showed increased indicators of flexibility, degree of development and verbal creativity. However, it should be noted that this is determined by the fact that the indicators of fluency and originality were initially at a high level in girls.

As for the results of factor analysis, the combination of the values of enjoyment and achievements into factors, which, according to the theory of S. Schwartz (2012), are close, can be explained by the strong interconnection among young people of striving for social recognition and getting pleasure from this. The fact of transformation of factor loads while implementing a socio-pedagogical program of personal development, which combined the value of spirituality and the general level of creative thinking, is also interesting. This result can be explained by the fact that creative thinking is significantly associated with the search for inner harmony, one's own purpose, and, in conjunction with the dynamics of systems of value orientations, to move away from the framework that limits the creative manifestations of a young person's personality.

Conclusion

1. In general, we can speak about the influence of the socio-pedagogical effects on internal motivation, which is also expressed in an increase in the creative thinking level. At the same time, there is a retreat from normative-oriented values beyond the limiting framework, which is consistent with the general theoretical ideas about the creative approach and, in general, about the creative personality. A creative approach to one's own life activity increases both the enjoyment of life and a more productive solution to creative problems.

2. Nevertheless, it is worth noting that value structures and cognitive structures have few relationships, or these connections have some non-linear structure, which was the result of the absence of unifying factor loads at the initial stages of experimental research. However, the thesis about the relationship of mental structures and value-motivational structures is also confirmed, which was manifested in the experiment, which is aimed at increasing motivation for a creative approach. This connection was expressed in a strong relationship between the

level of creative thinking and the value of spirituality, which can be explained by the orientation of the creative person to the search for inner harmony and one's own purpose in life.

3. The problem of the relationship between value-motivational structures and creative thinking of young people, raised in the study, deserves its continuation in revealing the factors that contribute to a creative approach in the educational process. At the same time, the observed relationship between the value of spirituality and the level of creative thinking can be recommended to be used in practical work in the field of higher professional education.

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