

Psycho-didactic Conditions for the Agency Development in the Educational and Professional Activities of Students*

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Abstract—The article is devoted to the experimental verification of the psycho-didactic agency development model in students of the pedagogical institute, built on the basis of the ecopsychological model of the subject's development and implemented during studying the academic course "Pedagogy and Psychology". It is shown that the use of this psycho-didactic learning model has a greater effect in the development of agency in pedagogical university students, than the use of traditional teaching methods.

Keywords—*ecopsychological model; psycho-didactic approach; stages of agency; regulatory component of activity; ambiguity tolerance*

I. INTRODUCTION

Within the framework of modern trends in the development of psychological science, the "subject" category is considered as a meta-integrative concept, which, according to the subject-activity approach, allows to build unifying models of human development that integrate the capabilities of both natural science and socio-humanistic studies. This provides a systematic approach to the study of various aspects of a person's individuality, his behavior and activities mediated by his subjective choices and preferences [1].

II. ECOPSYCHOLOGICAL MODEL OF AGENCY DEVELOPMENT OF STUDENTS AND TEACHERS

Agency and its development, in addition to the subject-

activity approach, is actively studied in the framework of the ecopsychological approach to the psychogeny [2] [3] [4]. A distinctive feature of this approach is that the agency development is considered in an ontological way – as a process of step-by-step (self)transformation of the subjective qualities of an individual in the continuum "spontaneous mental activity – mental activity in the form of a voluntary action". In this sense, the agency development supposes interaction with the subject of the gained action, and represents the procedural unity of the formation of mental activity in the form of instrumental and regulatory (planning, control, correction) components of the action explored by the individual. This approach allowed to develop an ecopsychological (ontological) agency development model, which is invariant to different activities (actions) and includes the following stages: the subject of motivation, the subject of perception ("observer"), the subject of echoic behavior ("apprentice"), the subject of educational voluntary execution of an action based on external control ("learner"), the subject of educational voluntary execution of an action based on internal control ("master"), a subject of external control ("expert"), a subject of productive development and creative self-development ("creator") [5].

Empirical verification of this ecopsychological agency development model was carried out on different samples of learners, students, teachers [6] [7] [8] [9]. After this, the task arose of checking the possibility of using this agency development model as a psychological basis for the creation of a psycho-didactic training model aimed at the development of students' agency (hereinafter, the psycho-didactic model). This article is devoted to this issue.

*This work was supported by the Russian Foundation for Basic Research (RFBR), Grant № 17-06-00871.

III. PSYCHO-DIDACTIC MODEL OF STUDENTS' AGENCY DEVELOPMENT

For this purpose, in accordance with each stage of the agency development, universal educational tasks and teaching methods were selected and developed, using not only subject-object, but also subject-generating and subject-conjoint types of interaction in the teacher-student relationship [10]. Educational tasks were partially focused on reproductive methods of educational activity (knowledge of educational material, its understanding and application), but to a greater degree educational work implied the need to analyze, summarize and compare the proposed educational materials, search for solutions in non-obvious situations, multivariate solutions and their evaluation, examination, creation of the new, advancement and testing of hypotheses using micro-research, and also the project activities [11].

Experimental verification of this psycho-didactic model was carried out on a sample of students of the pedagogical institute, studying in the field of "Foreign Languages" (N=30). The control group included students studying in the field of "Historical Sciences" (N=30).

Experimental group students were included in the implementation of an experimental psycho-didactic learning model in accordance with the ecopsychological stages of the agency development within the framework of the academic course "Pedagogy and Psychology" during four semesters in 2017-2019. Psycho-didactic approach to the formation of training programs takes into account the need to integrate knowledge content and the system of pedagogical actions / influences in accordance with the psychological patterns specific for each stage of the model. Therefore, the development of the educational process and the assessment of its quality had both didactic and psychological components, which should ensure the purposeful development of subjective qualities that have a generalized character, abstracted from the specific subject content of the academic discipline and relevant subject educational activities [12].

"Table I" presents a list of educational invariant tasks that were filled with meaningful subject material.

TABLE I. THE SYSTEM OF EDUCATIONAL TASKS IN ACCORDANCE WITH THE STAGES OF THE ECOPSYCHOLOGICAL MODEL

	Ecopsychological agency development model	Educational tasks
1	Observer	Familiarity with the scientific concepts of the topic, updating the glossary in workbooks. Work with primary sources, search for definitions. Note taking. Acquaintance with the methods of diagnostics of the studied psychological and pedagogical phenomenon.
2	Apprentice	Work with verification tests, test works, work in microgroups to create a mini-project "Crossword" on the proposed template, validation of the wording and answers.
3	Learner	Analysis of practical tasks (situations) according to the proposed algorithm; search and presentation of additional materials; approbation of diagnostic tools of the studied psychological and pedagogical phenomenon (work in pairs); drawing up a report on the results of diagnostics according to the proposed scheme.
4	Master	Business game, educational discussion, brainstorming in order to collect evidence or refute opinions (thesis) in relation to the topic of the lesson. Analytical review of the causes and methods of solving problems related to the topic. Creating algorithms for solving problems, presentation of the work results in the form of a project. Search for solutions in non-obvious situations. Training of pedagogical competencies.
5	Expert	Review of articles in periodicals devoted to the topic under study. Writing a review of the article. Attending a lesson in elementary school, pedagogical observation of personal manifestations in the activity and its effectiveness in learners successful in different degrees. Evaluation, comparison of manifestations. Selection of diagnostic tools and carrying out the psychological diagnostics. Description of psychological and pedagogical conditions conducive to or hindering the achievement of effectiveness. Preparation of a joint report on the study performed in microgroups, preparation for speaking at a conference, a round- table.
6	Creator	Writing an essay, coursework based on completed studies, development of guidelines and self-practice with learners or students, management of the project activities of the school child, the development of the final group project on a pressing issue related to the topic being studied. Training of creative abilities.

In this article, we present a comparative analysis of empirical data obtained in the experimental and control groups, which allows us to describe the psycho-didactic agency development model.

IV. RESEARCH METHODOLOGY

As criteria for the development of the subject of educational and professional activities, we have chosen the parameters characterizing such subjective qualities as attitude towards novelty, creativity, special aspects of activity self-organization, level of field independence, values-based orientations, locus of control and the level of

development of educational activity methods specific to each stage of ecopsychological model [13].

Based on the selected criteria, a package of diagnostic methods was selected, the construct of which answered the objectives of the study. To assess the development level of the subject of innovation activities in the student sample, the method "Stages of development of the subject of pedagogical activity" was used [14]. The following methods were also included in the diagnostic block: the "Creativity" method (N.F. Vishnyakova), the questionnaire for self-organization of activities (E.Yu. Mandrikova), the "Attitude towards ambiguity" questionnaire (D.A. Leontyev), the TCOB-4 methodology for the assessment of field independence / field

dependence and the presence of stereotypes of professional activity (V.V. Selivanov), the questionnaire "Value-based orientations" (O.I. Motkov).

The selected package of methods allowed to diagnose the parameters of mental activity in the unity of instrumental (the method "Stages of development of the subject of pedagogical activity") and the regulatory components of activity. In general, the analysis of the formedness of the subject agency was carried out according to 49 parameters. Diagnostic samples were prepared in the second semester of 2017 and in the second semester of 2019. In relation to empirical data, a Spearman's non-parametric rank correlation coefficient (r) and the analysis of the intercorrelation matrix were used with the help of the maximum correlation path method by L.K. Vyhandu with the definition of the average

rank of the variables involved in the correlation in order to identify the system-structural relationships between the psychological characteristics of the pedagogical agency development in students.

V. RESULTS OF EXPERIMENTAL VERIFICATION OF PSYCHO-DIDACTIC AGENCY DEVELOPMENT MODEL

First of all, we were interested in the development dynamics of indicators characterizing the level of development of subject qualities corresponding to each stage of agency. A comparative analysis of the data obtained in the experimental and control groups did not reveal significant differences, which initially caused doubts about the effectiveness of the psycho-didactic learning model (see Table 2).

TABLE II. THE AVERAGE RESULTS OF THE DEGREE OF AGENCY AT EACH STAGE OF THE ECOPSYCHOLOGICAL MODEL

	Observer	Apprentice	Learner	Master	Expert	Creator
Control group, 2019	2.82	2.77	3.29	4.30	3.44	4.23
Experimental group, 2019	3.28	2.89	3.62	4.15	3.30	3.86

However, the analysis of intercorrelation matrices revealed a significantly larger number of meaningful relationships of the studied parameters in the experimental group data. A greater number of significant correlations indicates the formedness and complication of the structure under study, its integrity, unity and qualitative development, its transition to a new level (see Table 4).

As the parameters characterizing the stage of the subject of motivation, value-based orientations were chosen that reveal the semantic field of human activity. The role of value-based orientations is that they give the direction to the professional activity, allow to take a certain position, regulate behavior, form ways of self-actualization of a person (see Table 3).

TABLE III. DYNAMICS OF PARAMETERS CHARACTERIZING THE STAGE OF THE SUBJECT OF MOTIVATION

Groups	Externality	Influence of own efforts on the achievement of external values	Influence of own efforts on achievement of internal values	Internality
Control group, 2019	3.45	3.05	3.62	3.80
Experimental group, 2019	3.37	3.59	3.96	3.95

External values, according to the construct of O.I. Motkov method, orient a person primarily towards the attitudes towards himself by others and the assessment of his importance in the social environment, i.e. on social self-affirmation. Internal values orient towards the development of self-reliance, independence, competence and self-expression in creativity. Significant differences in the averages were not found, while in the experimental group there was a tendency to a decrease in externality and the development of internality in the field of realization of internal values [15]. "Table IV" presents the structure of the relationship of the parameters studied, obtained from samples of the control and experimental groups.

TABLE IV. THE RELATIONSHIP OF COMPONENTS OF INNOVATIVE READINESS AND PARAMETERS CHARACTERIZING THE SUBJECT OF INNOVATIVE ACTIVITIES

	Stages of agency	Control group, 2019	Experimental group, 2019
1	Observer O	L, $r = 0.331$ (at $p \leq 0.05$); M, $r = -0.555$ (at $p \leq 0.01$); C, $r = -0.580$ (at $p \leq 0.01$);	A, $r = -0.460$ (at $p \leq 0.01$); M, $r = -0.525$ (at $p \leq 0.01$); C, $r = -0.721$ (at $p \leq 0.01$); Purposefulness, $r = -0.347$ (at $p \leq 0.05$); Perseverance, $r = -0.392$ (at $p \leq 0.05$); Creative thinking, $r = -0.383$ (at $p \leq 0.05$); Stereotypes of professional activity, $r = 0.415$ (at $p \leq 0.05$);
2	Apprentice A	L, $r = 0.251$ (at $p \leq 0.05$); M, $r = -0.299$ (at $p \leq 0.05$); E, $r = -0.537$ (at $p \leq 0.01$); C, $r = -0.356$ (at $p \leq 0.05$); Conscientiousness, $r = -0.237$ (at $p \leq 0.05$).	O, $r = 0.469$ (at $p \leq 0.01$); M, $r = -0.621$ (at $p \leq 0.01$); E, $r = -0.353$ (at $p \leq 0.05$); C, $r = -0.563$ (at $p \leq 0.01$); Attitude towards complex tasks, $r = 0.366$ (at $p \leq 0.05$); Neuroticism, $r = 0.388$ (at $p \leq 0.05$); Stereotypes of professional activity, $r = 0.427$ (at $p \leq 0.01$); Attitude towards complex tasks, $r = -0.468$ (at $p \leq 0.01$).
3	Learner L	O, $r = 0.331$ (at $p \leq 0.05$); A, $r = 0.251$ (at $p \leq 0.05$); M, $r = -0.513$ (at $p \leq 0.01$); E, $r = -0.340$ (at $p \leq 0.05$); C, $r = -0.590$ (at $p \leq 0.05$).	M, $r = -0.466$ (at $p \leq 0.01$); C, $r = -0.512$ (at $p \leq 0.01$); Creative thinking, $r = -0.376$ (at $p \leq 0.05$); Attitude towards innovations, $r = 0.422$ (at $p \leq 0.01$); Stereotypes of professional activity, $r = 0.375$ (at $p \leq 0.05$); Influence of own efforts on achievement of internal values, $r = -0.364$ (at $p \leq 0.05$);
4	Master M	O, $r = -0.555$ (at $p \leq 0.01$); A, $r = -0.299$ (at $p \leq 0.05$); L, $r = -0.513$ (at $p \leq 0.01$); C, $r = 0.316$ (at $p \leq 0.05$).	O, $r = -0.525$ (at $p \leq 0.01$); A, $r = -0.563$ (at $p \leq 0.01$); L, $r = -0.466$ (at $p \leq 0.01$); C, $r = 0.464$ (at $p \leq 0.01$); Neuroticism, $r = -0.421$ (at $p \leq 0.01$); Creative thinking, $r = 0.586$ (at $p \leq 0.01$); Attitude towards complex tasks, $r = 0.349$ (at $p \leq 0.05$).
5	Expert E	O, $r = -0.270$ (at $p \leq 0.05$); A, $r = -0.365$ (at $p \leq 0.05$); L, $r = -0.590$ (at $p \leq 0.01$); C, $r = 0.266$ (at $p \leq 0.05$); Conscientiousness, $r = 0.282$ (at $p \leq 0.05$); Attitude towards novelty, $r = -0.273$ (at $p \leq 0.05$).	A, $r = -0.353$ (at $p \leq 0.05$); L, $r = -0.297$ (at $p \leq 0.05$); Attitude towards complex tasks, $r = 0.517$ (at $p \leq 0.01$); Ambiguity acceptance, $r = 0.385$ (at $p \leq 0.05$); Externality, $r = -0.520$ (at $p \leq 0.01$).
6	Creator C	O, $r = -0.580$ (at $p \leq 0.01$); A, $r = -0.365$ (at $p \leq 0.05$); L, $r = -0.590$ (at $p \leq 0.01$); M, $r = 0.316$ (at $p \leq 0.05$); E, $r = 0.266$ (at $p \leq 0.05$).	O, $r = -0.721$ (at $p \leq 0.01$); A, $r = -0.583$ (at $p \leq 0.01$); L, $r = -0.512$ (at $p \leq 0.01$); M, $r = 0.464$ (at $p \leq 0.01$); Creative thinking, $r = 0.346$ (at $p \leq 0.05$); Stereotypes of professional activity, $r = -0.424$ (at $p \leq 0.01$).

^{a1} (r crit. = 0.332 at $p \leq 0.01$; r crit. = 0.418 at $p \leq 0.05$)

VI. DISCUSSION OF THE RESULTS

Educational and professional activity suppose carrying out tasks of different content and level, which makes it necessary to manifest agency of different levels. Therefore, the empirical results of testing a theoretical ecopsychological model on different samples, including the ones in this study, indicate that the average results characterizing the agency development level at each stage of the ecopsychological model (see Table 2) are located approximately in the same numerical range, except the "Expert" stage. In our opinion, the agency at the "Expert" stage is associated with research potential, as the ability to effectively and successfully solve research problems based on the skill of identifying a problem, criteria for analyzing and evaluating a solution, putting forward hypotheses and searching for their proof. The properties of the subject of research activities, as N.V. Bordovskaya emphasizes, are "a systemic and integral characteristic of resources – internal and acquired in the process of training, education and development... necessary and sufficient for mastering and successful self-implementation of research activities" [16].

Referring to the results of E.N. Malova study [17], performed on a sample of students of 1 and 4 courses of the pedagogical institute (N=128), we can state that the research potential of students is expressed at a low level. Differences in indicators of 1 and 4 courses are practically absent. In this case, the conclusions are not encouraging: the learning process does not develop the research potential of future teachers. In this regard, we have included studies aimed at developing the expert position in relation to individual and group results of activity based on the selected criteria in the experimental learning model. Students were becoming familiar with the methodology of scientific research. Reviewing of articles, examination of completed projects, reflexive analysis of practical activities during its modeling, organization of practical research in the framework of educational practices were proposed as tasks. The study ended with a scientific article and presentation of results at student conferences [18].

An analysis of the results of the correlation analysis obtained in the experimental and control groups allows to suggest that the experimental model developed in accordance with the ecopsychological stages of the agency development corresponds to the objectives of our study. Differences in the structure of the parameters of the control and experimental groups are interpreted by us as follows:

- the parameters characterizing the expressiveness of agency at each stage of the model form a significantly larger number of significant correlations in the experimental sample, which indicates a qualitative transformation of the structure under study, its complication, development and transition to a new level. The structure of parameters in the control group reflects only the obvious interrelationships of the characteristics of the agency stages;
- the results of the expressiveness of agency in the first three stages of the model form negative correlations

with the expressiveness of agency in the stages "Master", "Expert", "Creator". This means that the more routine, reproductive work is present in the educational process, the less opportunities arise for the full development of the subject of educational and professional activity. Note that both in the control and experimental samples, the interrelationships of the agency stages are almost the same, which indicates the internal consistency, validity and retest reliability of the questionnaire used to diagnose the agency development level [19].

The indicated negative correlations of the stages indicate that at the first three stages mainly the instrumental component of the activity is formed. The developmental potential of learning tasks is not enough for the development of the regulatory component. This is confirmed by the negative relationship between the expressiveness of agency at these stages and the parameters "Purposefulness", "Perseverance", "Creative Thinking", "Influence of own efforts on the achievement of inner development values" in the experimental group. The parameters "Regularity", "Purposefulness" and "Perseverance" diagnose the ability of an individual to self-organize / self-regulate the activity and characterize the subject's involvement in tactical daily planning, concentration on goals, and the tendency to apply volitional efforts to regulate the activity. The positive correlations of the "Apprentice" stage with the parameter "Stereotypes of professional activity" and "Neuroticism" confirm mastering of routine activities. The "Learner" stage is transitional, since at this stage there is an interest in new content of activity (Attitude towards innovations, $r=0.422$, at $p \leq 0.01$).

The "Master" stage is characterized by a reduction in neuroticism (the emergence of self-efficacy), creative thinking and interest in complex tasks. An interesting fact is that the "Expert" stage did not receive significant relationships with the "Master" and "Creator" stages, which may be a confirmation of the previously expressed opinion that the instrumental content of agency, corresponding to the stage, is ignored in the educational process. At the same time, it is important to emphasize that the stage has formed significant correlates with the parameters "Attitude towards complex tasks" and "Ambiguity acceptance". The "Creator" stage is characterized by creative thinking and denial of stereotypes of professional activity.

The discovered relationships cannot answer the question: what is the prerequisite and what is the determinant of development, but analyzing the array of correlation coefficients using the maximum correlation path method by L.K. Vyhandu with determining the average rank weight of the studied parameters revealed that the following parameters dominate: ambiguity preference ($r=0.810$, rank 1); attitude towards complex tasks ($r=0.777$, rank 2); attitude towards ambiguity ($r=0.828$, rank 3); ambiguity tolerance ($r=0.820$, rank 4); influence of own efforts on achievement of internal values (self-reliance, independence, competence and self-efficacy). In turn, ambiguity tolerance as a general category with respect to ambiguity acceptance, attitude towards novelty and complex tasks, is interconnected with

parameters characterizing the self-organization of activity: regularity ($r= 0.504$ at $p\leq 0.01$); purposefulness ($r= 0.440$ at $p\leq 0.01$); perseverance ($r= 0.525$ at $p\leq 0.01$), externality ($r= -0.466$ at $p\leq 0.01$). D.A. Leont'yev emphasizes that a person tolerant to ambiguity is characterized by perception of ambiguous situations as desired, the ability to reflect on a problem and to confront contradictory information, to experience stress, to perceive the unknown as a stimulating search, challenge [20]. Accordingly, the adoption to solve complex ambiguous situations makes the learner "more complicated", finding his own agency in its full meaning. D.A. Leont'yev also noted that the control and regulation of the degree of ambiguity of educational tasks have a positive effect on student satisfaction with the results achieved, which, in our opinion, will support the agency of the motivation stage.

VII. CONCLUSION

Analysis of the data obtained during the experimental verification of the ecopsychological model of the development of the subject of educational and professional activity allows us to identify the agency development mechanism:

Educational tasks of a reproductive nature form agency in the first three stages of the ecopsychological model ("Observer", "Apprentice", "Learner"), which are characterized by the assimilation of traditional methods of educational activity, anxiety in ambiguous situations and external management of educational activity.

The transition to the "Master", "Expert" and "Creator" stages is due to the psycho-didactic learning model includes educational tasks of a generalized nature, initiating an exploratory search for solutions in non-obvious situations, involving multiple-choice solutions, their evaluation, creation of new ideas, putting forward hypotheses and their proofing through micro-research, project activities.

The implementation of the psycho-didactic learning model creates conditions for the actualization of personal creative potential, forms the ability to act in an ambiguous situation, which in turn begins to influence the regulatory component of the activity, developing perseverance, ability to goal-setting and self-organization of activity and personal internality.

The agency development at the "Expert" stage requires the inclusion in the curricula of an additional training module aimed at mastering the methodology and algorithm of research work, as well as the development of all components of the research potential – motivational, cognitive, behavioral.

Thus, we received confirmation of the possibility of using the ecopsychological model of the agency development as a psychological condition and the basis for the development of psycho-didactic learning models aimed at the development of students' agency.

REFERENCES

- [1] Ye.A. Sergiyenko, Realizatsiya printsipa razvitiya v issledovaniyakh psikhologii sub'yekta [The implementation of the development principle in the studies of the subject's psychology], *Psikhologicheskiy zhurnal* [Psychological Journal], 2017, vol. 38, no. 2, pp. 5–18.
- [2] Stanovleniye sub'yektnosti uchashchegosya i pedagoga: ekopsikhologicheskaya model' [Agency development of the student and teacher: eco-psychological model], ed. V.I. Panov, Moscow, Psikhologicheskiy institut RAO [Psychological Institute of Russian Academy of Education], SPb, Nestor-Istoriya, 2018.
- [3] V. Panov, I. Plaksina, Didactic and Psychodidactic Features of Forming Universal Learning Action Subject, Proceedings of the 3rd International Conference on Arts, Design and Contemporary Education (ICADCE 2017), vol. 124, pp. 546-550. DOI: 10.2991/icadce-17.2017.129.
- [4] V.I. Panov, I.V. Plaksina, The peculiarities of the agency of schoolchildren of 7-8 and 8-10 classes, The European Proceedings of Social & Behavioural Sciences, International Conference on Psychology and Education (ICPE 2018), pp. 533-541. DOI: 10.15405/epsbs.2018.11.02.59.
- [5] V.I. Panov, I.V. Plaksina. Kharakteristiki pedagogicheskoy sub'yektnosti [Characteristics of pedagogical agency], Bulletin of Vladimir state university named after A.G. and N.G. Stoletovs. Series: Pedagogical and psychological sciences, 2016, no. 25 (44), pp. 86–96.
- [6] A.V. Kaptsov, Ye.I. Kolesnikova, I.V. Plaksina, M.V. Selezneva, Diagnostika stadiy stanovleniya sub'yektnosti obuchayushchikhsya [Diagnosis of the stages of development of students' agency], *Psikhologiya. Istoriko-kriticheskiye obzory i sovremennyye issledovaniya* [Psychology. Historical-critical Reviews and Current Researches], 2018, no. 5, pp. 134–145.
- [7] V.I. Panov, I.V. Plaksina. Kharakteristiki pedagogicheskoy sub'yektnosti [Characteristics of pedagogical agency], Bulletin of Vladimir state university named after A.G. and N.G. Stoletovs. Series: Pedagogical and psychological sciences, 2016, no. 25 (44), pp. 86–96.
- [8] Stanovleniye sub'yektnosti uchashchegosya i pedagoga: ekopsikhologicheskaya model' [Agency development of the student and teacher: eco-psychological model], ed. V.I. Panov, Moscow, Psikhologicheskiy institut RAO [Psychological Institute of Russian Academy of Education], SPb, Nestor-Istoriya, 2018.
- [9] V.I. Panov, I.V. Plaksina, "The peculiarities of the agency of schoolchildren of 7-8 and 8-10 classes," The European Proceedings of Social & Behavioural Sciences, International Conference on Psychology and Education (ICPE 2018), pp. 533–541. DOI: 10.15405/epsbs.2018.11.02.59.
- [10] V.Yu. Ivlev, Yu.V. Ivlev V.Yu., M.L. Ivleva, "Logical-argumentative basics of educational culture," Proceedings of 4th International Conference on Education, Language, Art and Intercultural Communication (ICELAIC 2017). Series "Advances in Social Science, Education and Humanities Research", 2017, vol. 142, pp. 173–177. DOI: 10.2991/icelaic-17.2017.38
- [11] N.N. Gubanov, N.I. Gubanov and L.O. Rokotyanskaya, Apollo's Challenge as a Driving Force in Education, Proceedings of the International Conference on Contemporary Education, Social Sciences and Ecological Studies (CESSSES 2018). Series "Advances in Social Science, Education and Humanities Research", 2018, vol. 283, pp. 13-17. DOI: 10.2991/cesses-18.2018.4
- [12] Vitaly Yu. Ivlev, Marina I.Ivleva, Marina L.Ivleva, "Ecological Regulation of Economy as a Concept of Social Philosophy", *Voprosy Filosofii*, 2019 #7. P.107-117.
- [13] I.V. Plaksina, Kriterii stadial'nogo razvitiya pedagogicheskoy sub'yektnosti [Criteria for the stadial development of pedagogical agency], Proceedings of the jubilee conference "Ot istokov k sovremennosti: 130 let organizatsii psikhologicheskogo obshchestva pri Moskovskom universitete" [From the beginnings to the present: 130 years of the Psychological society organization at Moscow University], in 5 vol., Moscow, Kogito-Tsentr, 2015, vol. 2, pp. 392–395.

- [14] A.V. Kaptsov, Ye.I. Kolesnikova, I.V. Plaksina, M.V. Selezneva, Diagnostika stadiy stanovleniya sub'yektnosti obuchayushchikhsya [Diagnosis of the stages of development of students' agency], *Psikhologiya. Istoriko-kriticheskiye obzory i sovremennyye issledovaniya* [Psychology. Historical-critical Reviews and Current Researches], 2018, no. 5, pp. 134–145.
- [15] N.N. Gubanov and N.I. Gubanov, Mental Bases of Social Solidarity, *Proceedings of the International Conference on Contemporary Education, Social Sciences and Ecological Studies (CESSSES 2018)*. Series "Advances in Social Science, Education and Humanities Research", 2018, vol. 283, pp. 998–1002. DOI: 10.2991/cesses-18.2018.219
- [16] N.V. Bordovskaya, S.N. Kostromina, S.I. Rozum, N.L. Moskvicheva, Issledovatel'skiy potentsial studenta: sodержaniye konstrukta i metodika yego otsenki [Student's research potential: the construct content and the method of its assessment], *Psikhologicheskiy zhurnal* [Psychological Journal], 2017, vol. 38, no. 2, pp. 89–103.
- [17] Ye.N. Malova, Issledovatel'skiy potentsial budushchikh pedagogov kak usloviye stanovleniya sub'yekta innovatsionnoy pedagogicheskoy deyatel'nosti [Research potential of future teachers as a condition for the development of the subject of innovative educational activities], *Proceedings of the Russian National Network Scientific Conference "Metodologicheskiye oriyentiry razvitiya sovremennoy nauchno-didakticheskoy mysli"* [Methodological guidelines for the development of modern scientific and didactic thought], November 21-29, 2018, Compiled by: A.A. Mamchenko, Moscow, Institute for strategy of education development of the Russian Academy of Education, 2018, pp. 484–492.
- [18] Ivleva M.L., Ivlev V.Yu. Principal approaches of modern psychology to constructing giftedness // "Proceedings of the 2017 2nd International Conference on Contemporary Education, Social Sciences and Humanities". (ICCESSH 2017). Part of the series ASSEHR. Moscow, Russia. V.124. P.1176-1180.
- [19] N.N. Gubanov, N.I. Gubanov and L.O. Rokotyanskaya, Prospects for the Development of a Universal Theory of Truth, *Proceedings of the International Conference on Contemporary Education, Social Sciences and Ecological Studies (CESSSES 2018)*. Series "Advances in Social Science, Education and Humanities Research", 2018, vol. 283, pp. 801–805. DOI: 10.2991/cesses-18.2018.177
- [20] Lichnostnyy potentsial: struktura i diagnostika [Personal potential: structure and diagnosis], ed. D.A. Leont'yev, Moscow, Smysl, 2011.