THE PURPOSE OF INNOVATE HIGH SCHOOL TECHNOLOGIES -FORMATION OF DESIGN CULTURE OF THINKING OF THE SELFDEVELOPED PROFESSIONAL

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Abstract
On the basis of the interdisciplinary approach modern approaches to the research of FK-technologies are analyzed, on a new theoretical and methodical basis base components of structure of educational space and a subject domain physical training are allocated and described.

Keywords: *logical-methodological principles of scientific research, educational training, self-control, development of the person, integrated individuality.*

The Subject Domain of Research, the Main Goals, Objectives and Methods of University Education. The research of Russian methodologists in the sphere of education (V.V.Davydov, G.P.Shchedrovitsky, V.S.Bibler, Mikhaylov), physical training (L.P.Matveev, Y.K.Gaverdovsky, V.B.Korenberg) and works of scientists in the area of psychology and semantics of arts (L.S.Vygotsky, M.M. Bakhtin, Y.M.Lotman) require new metatheoretic generalizations. The public exchange of knowledge in international publications is needed on matters of education philosophy and methodology of pedagogics «overflowing» into each other. The important task is to unite Russian scholars with foreign colleagues. In modern social-pedagogical and liberal sciences culture, art, sports, education are considered as the process of interpersonal communication, the variety of domain-organized and individual-activity communication of people. It is known that in the said activities continuous transitions are realized from «material motions» of a human body (somatopsychic mechanisms) to «ideal motions» of a soul (semantic mechanisms of intelligence, psychics, consciousness) and, certainly, vice versa. It should be kept in mind that human socio-cultural physical actions, which essential features are an individual's creative process and the availability of socially significant product (ideal and material one) are immanent to biosocial human nature (designer baby) (J.Adams-Webber, D.Garz) and promote, advance the social progress, develop the professional mentality.

The concept of «professional mentality» presupposes not only a «domain aspect» (the ability to solve skillfully problems in a certain ad-hoc – object-subject field) but also «methadomain abilities» (professional's broad-context competences) connected with search heuristics, probabilistic mentality, reflexive attitude of a person to everything what this person believes, does and comprehends. Students must be able to pass beyond "the bounds of specialization" into the sphere of profession-oriented competencies – to develop in themselves abilities to innovations and experiments in transsubject (super-subject) fields of activity by orienting at infinite variety (including uncertainty) of current tasks. It is necessary to look for ways of uniting dialogical («dialogue of cultures», «dialogue of world views») and subject-intentional methods of education. The main goals and objectives of the Article are to examine some anthropic (person-developing) methods and learning techniques, which enable to actuate human abilities and will to productive activity, to culture-creativity and creativity to self-attribution, self-affirmation, self-realization in socium and culture.

The sphere of self-consciousness, world outlook, «dialogue field of intersubjectivity» is the most important aid of the **inner human transformation**. At the same time the

impossibility for a person to self-realize oneself as an individual subject of creation (taking into account all classical, non-classical and post-classical characteristics of human subjectivity) means that the development of human nature is possible only in the sociocultural system of interindividual and group interaction of people. Just here an individual **realizes** oneself as a personality and individuality (grows older – «presents» its nature to society and to oneself by changing oneself, by self-perfecting and self-realizing) – not only assimilates the social culture (internalizes its sense and values) but also **self-realizes** in this culture. In fact, such individual «grows into culture» and «outgrows from culture». Culture in the «thesaurus» understanding (culture as thesaurus) is a sort of an aggregate potential and a product of human activity, «semantic-activity universum», the integration of human perception, thought and action. Culture phenomena are represented in semantic spaces of language, constructive thinking, activity, personality co-existing in each other. There are no activity, actions, acts of a man without language, the same as there may not be language, perception, thinking without the said phenomena. What was the first – a Word or a Matter? Who was right – evangelist Johan or Goethe's Faust? L.Wittgenstein came to the conclusion that «vision what» (object-subject world) and «vision how» (technology of perception, understanding and transformation of world) correspond to the integrative whole [6]. The German term «der Bedriff», which means "the understanding of an object", is linguistically connected with «greifen», which means «to grip» (a sort of mental-motive connotations). We use the term «mutual» (from English and French *mutual* – joint, reciprocal) construction of culture world, the dialogue of different senses of human being, constructive thinking and productive activity [3, 4, 6]. Culture is not a separate social sphere but it represents a through system piercing all socium and the inner sphere of a personality. Strictly speaking, «the education of an individual» does not mean «the interiorization of social culture» (as it is commonly supposed in conventional educational technologies) but the accumulation of experience in the culture creating activity [2, 8, 10]. It should be kept in mind that cultural values such as world outlook, spirit and spirituality are not producible because they represent by themselves the universal mechanism of self-motion of individuality-personality. A «human measure» is transcribed here, transferred to a product of its creativity and a person «goes out in a man-made object».

The educational communication and methods of intercourse in the sphere of physical training and sports as one of the most complex types of «science-technology dialogue», «consciousness-world outlook dialogue», «spiritual-activity mutual enrichment» of people have been chosen by us as the research domain. We consider herewith the theory, technology and student teaching (as a science and as a process of human creativity realization) as conjugate and interconvertible knowledge/ skills/ abilities-competences having the common ontological nature. They must be constructed by method of «bootstrap interaction» (G.F.Chew). This method is originated from the English verb "bootstrap" («lace up») and means the search for internal relatedness. Anthropic methods are «not as flowers in a bouquet but as parts of a flowering plant» (Cl.Brooks). The building of bridges between the natural-scientific and liberal forms of knowledge in sports-physical pedagogics is necessary (and possibly) already at that stage of the development of educational learning technology in physical training [2, 3, 4].

It should be kept in mind that activity-arranged forms of knowledge/ consciousness / intelligence are *auto-generative systems*. It means that they generate and stimulate the self-development through the socio-cultural activity, including by means of reflexive-semantic (mental, perceptive, body-motor) «self-actions» of a man. If human actions are generally programmable by the central nervous system (R.L.Achoff, J.Adams-Webber), than ***self-actions*** (this term is used in research of D.Bohm [1], L.Wittgenstein [6]) are the results of *self-organization* process and they are not controlled by motor program instructions. The principal peculiarity of a

modern approach in the education system is clearly expressed ***constructivism*** [2, 3, 8, 10]. We accentuate here that the required (relevant) knowledge are not extracted from an object of cognition but it is obtained from the professionally arranged human activity with the said object/subject. Knowledge as a form of human cognition is generated not so much by conclusions as by cognitive-heuristic abilities such as the imaginative thinking, the emotional or intellectual intuition, a mental or practical experiment with an object or its model. It should be noted that any model of such object is at the same time the representation of a cognitive and active subject as this model fixes a specific attitude to environment and to an object simulated and involves its creator and user into the said attitude. It becomes clear today that the construction of conceptual systems and theories as well as «concluded essences» (inductive inferences) are, to a considerable extent, *«mental constructions»*. It is quite evident that a person does not take the world directly as it is. That person just possesses some internal representations of the world. No human knowledge exists without mental representation (an object sphere of cognition, thinking, action). It occurs *«in consciousness through action»* and *«for consciousness of an active person»*. This is an object of idealization. It is an idealized subject, in which «surplus value» of a sociocultural product of human activity is created. The scientific activity is not reduced to «text producing» – it is necessary to improve models used by us for explaining and constructing the reality. To obtain transferent and fully «transferable knowledge», it is necessary to develop triangulation methods [1, 5, 6] – the cross-interpretation of one or another texts, the reflexive analysis-synthesis of different scientific sources, the use of independent experts.

It is known that the sociocultural activity of a person is realized in the following three main forms: ***cognitve*** (the reflection of reality as it is or as it is imagined by an individual), ***predictive-conversion*** (the reflection and conversion of the reality in terms of its possible changes or in compliance with intent or program of control for actions) and ***value-meaning*** (the axiologic valuation of the reality based on the world outlook and personal positions). Cognition, conversion and valuation are not three stages of human activity, which change one another, but are aspects, in more exact terms, – «sections» of subject-arranged activity, which exist in their real being as one in another and through another. Together they form some «world-vision continuum» of an active person including of such person's attitude to the world, i.e. onthic and reflexive layers of organized consciousness. It is important to keep in mind that results of the human spiritual-practical activity are represented in the unity of three hypostases as a material (biophysical, neurophysiological) and ideal (psychosemantic) *process*, as *technological realization* in activity of intellectual-value (energeia) and somatopsychic mechanisms (including extralinguistic and extralogical ones) and as a *sociocultural product* (ergon). In sociocultural activity a scientist, a painter, a sportsman, while reflecting and transforming the reality, at the same time self-identifies (with any other persons' help), self-asserts (but not at anyone's expense), self-actualizes and self-constructs him/herself, realizes his/her abilities as a creative personality/ individuality. Actions for such self-realization and world transformation will certainly include idealization, abstraction, «reflection of the world in me and me in the world», relations with oneself and with other people. They more or less comply (or do not comply) with individual needs (obtain personalized meaning) and with public needs (obtain social meaning).

Thus, it is necessary to conduct research in activity ontology of education, culture, sports, arts, which enable to overcome «monoconceptual technologies». Herewith there are required some more precise definitions used in today's education. So, it is known that ***psychoanalytical conceptions*** are oriented in science and education at *problems of relatedness* of a person with him/herself, with other people and with «significant objects» of activity (relatedness). Educational technologies

are thereat interpreted on the basis on methods of explanation and programmable control. It is known that to understand one or another object means to be able to program its perception, to program any teaching or learning actions, to form and interpret subject-matter meanings, to be able to substantiate logically applied logarithms. ***Cognitive-behavioural conceptions*** are based on the analysis of the *activity productivity* and human *doing effectiveness*. Experts suppose that science investigates the objective reality, art expresses the main point (the essence of both the objective and subjective reality), technology enables to design and develop its transformation methods and algorithms. Religion is based on supernatural, transcendental (from Latin word "transcendo" meaning «to overrun bounds») phenomena, which are principally inaccessible to practical cognition or are not based on experience. «That is rational, what is expedient»; «That is expedient, what is necessary for successful functioning of the system» – these are technocratic rationality criteria applied by teachers and students in teaching and learning. The explanation of a learning-cognitive object is generally considered as means servicing its understanding and transformation. At the same time it is necessary to keep in mind that student's imaginative thinking is especially intensively developed when there is formed «a space of creative indefiniteness» as a certain deficit of didactic information (domain-problem situation of activity), some methods of «incentive incompleteness» are used, which leave freedom for producing new ideas, purposes, intents, technologies.

Humanistic conceptions are oriented at *problems of human being* such as «to have necessary wants and abilities» (to create products of the subject world «significant in terms of wants»), «to be identical» (to self-realize in socium), «to strive for» (to be oriented at future). However the spiritual-activity of a human being is here frequently identified with consciousness (aimed at the realization of own social and individual essence) and a personality appears as the totality of interiorized social relations, as a set of social functions / roles and as a carrying medium of one or another information. In such overall «informatization of being» spirituality is often reduced to «Ego-matrix», to thinking and intellectual source (within formal-logical operations), communication – to intracommunication and operation meanings, intellectuality – to artificial intelligence, concept-formation methods (D.Premack) and «biocyberagogics» (M.P. Shestakov's term). In such systems of education the knowledge is not only «impersonalized» (becomes «database» for trado technologies – «I transfer») but also «dehumanized» (becomes impersonal «infosphere of perception agent»). Herein we face with ***domination of not art as a process*** (solving) ***and skills of personality/ individuality but artifact*** (solution) as a result of computer art (deux machine), algorithmic or probabilistic programming of teaching/ training actions, «computer hermeneutics», virtually converted reality.

In innovation didactics one surely cannot repudiate reproductive technologies such as «the reproduction of the known with the help of new methods and techniques» and «the selection of the optimum in the system of conventional methods and aids». In our opinion, however, an emphasis is to be made not so much on «the transfer» of canonized and standardized «education norms» than on unsettling of students' mental-technical stereotypes interfering «to think freely and to act heuristically». It is necessary to teach students to work with their own consciousness, to improve competency thesaurus, to master the reflexive methodology of thinking (to see emerging problems) and to develop educational-developing technologies (to solve problems, to extend personal/individual knowledge-abilities related to professional activity). There may be singled out the following three types of «reflexive mind»: an able man (capable of creating a «man-made» socially important product), a clever man (using rationally concepts, constructive ideas, meta-object technologies), an experienced man (value-oriented at the shift from self-determination and actualization of

individuation/ personality to its self-realization in activity).

Educational paradigms specified by us set opposite reference points. A gap takes always place between «logos» and «praxis». So, in psychoanalysis the individual's *internal reality* (realizing its individuality) is made the corner-stone and the external reality is most often considered through the prism of human projections-introjections. In beheviourism, on the contrary, an aberration from internal factors is declared in favour of the *external reality* (the obtaining of positive control over the object environment of activity). In humanistic psychology and pedagogics the internal reality is considered as one of the mechanisms of *creative self-realization of individuality* in socium («spiritual reproduction»). «Spiritual essence is mine», «personality in me but it is not mine» (W.Neubaner) – it is something that imported from socium (a personality acts here as a «cast» of socium). The spiritual personification of a man in society is displayed not only in such man's aspiration «to be individual» but also «to be oneself» (C.R.Rogers). It is known that the inner object world of a man includes both the social world as the sphere of joint existence of individual and collective experience (social norms and expectations) and the existential world as the sphere of individual existence of people. The said measurements (measures) of human being represent the main sources and mechanisms of the student's educational development. A man grows into this «interiorization and exteriorization process» and states one's uniqueness, establishes oneself in sociocultural environment, realizes personal and social identity.

It is known that anthropic technologies, in which the attribution of personality/ individuality dominates as the centrality on the subject but not on the object of cognition and transformation, are connected with the *culture creation* but not with the reproduction (translation) of «sociocultural educational standards». In the education system the anthropic technologist's activity is congenial to that of a painter-creator – a style maker but not a stylizator. The first one, as is known, is elite (in fact he is unique), the second one is elitist (a retranslator of conventional methods and teaching aids).

In anthropic-organized technologies methods of *syntonic communication* and *rapport* are realized in many ways. A syntonic model of educational communication («syntony» means to be in harmony with oneself and other people) enables to achieve *congruence* – the internal consistency of thoughts, wishes, feelings, actions of students in a study or sports group, to avoid internal contradictions. Rapport (from the French word *rapport* – relation, attitude; *rapporter* – to bring back) is the result of interpersonal relations based on high-degree interests, feelings, other-directions; this is a friendly atmosphere in educational-teaching environment. The shift from "pedagogy of influence" to "pedagogy of cooperation" is implemented here through the «activity communication», through the other people interaction, the «joint intentionality» (the term of German psychologist M. Tomacello). The activity ***comm***unication (as distinct from communication as information exchange) produces between persons a ***comm***on object-arranged environment of the constructive thinking activity – training by means of the common activity. Herewith the identification of subjects occurs, their self-actualization, self-determination, a «personal axiosphere» is improved. «Educational dialogues» are not only the communication of students with a teacher-researcher-technologist, a mental dispute or a disagreement with the latter, this is an innovation in subject-discipline contents and teaching/learning technologies and the self-cognition of themselves (the group and personal identification) and the sense-making of a personality (the skill to go out to social and spiritual dimensions) and the realization of individuality in socium – mechanisms of self-identification and aspiration to perfection. A person «without loosing itself» (its individuality) should be ready to a positive dialogue, ready to understand and to accept another man. These are «self-standing», «selfness», «empathy»,

tolerance, consistency of different world outlooks and cultures. One of the important results of the activity communication in the sphere of education is the improvement of system of individualized, personal and socio-cultural relations to oneself, to society, to other people. It is necessary to take into account (and to elaborate) methods of open (generative) teaching/ learning in extensive procedures of free «turnover of knowledge, skills, values» in the developing (and self-developing) education system. In the system of the educational development not so much a taught student is important as a learning (developing) person making an emphasis on the formation of the *occupational skillfulness* (as a trait of a personality) and the *individual-personal development* (wants, abilities, self-consciousness, world outlook).

It is important to keep in mind that a *dialogue of a man with works of culture, with «measure setting sociocodes» of science and education surely changes to a dialogue with oneself and other people*. In the course of such a dialogue (polylogue) a subject masters and creates itself, performs not so much intellectual acts (intelligence is just an ability of thinking as a technical process) as culture creating actions. Self-cognition, self-realization and self-expression constitute the most important mechanisms of the human attitude to the world and with the world emerging in the course of and based on the socio-cultural activity. The socio-cultural activity is such a demonstration of human being when the *determination results from a subject* – these are not intentions that are determined by the world but the object world is pre-determined by the realization of our intentions occurring in the course of the deep subject-reality communication. The human activity is in many ways determined by deep structures of consciousness and protoconsciousness, language and protolanguage, «preverbal cognitive concepts» (D.Premack), «specific-generic properties» (K. Marx). The following reflection diagram represented in figure enables to a certain extent to connect to the «system of reflection» of the inner world of a personality. Let us imagine that a left-hand small man is a subject of cognition and a right-hand small man acting simultaneously as «an object of cognition». In fact, a researcher/ technologist/ teacher/ student coincide to a certain extent with an object of research as there is no «demarcation borderline» between them (V.A Lefebvre). To understand the sphere of his/her consciousness, a researcher should «look inside him/herself». This mechanism represents a bridge, which connects external and internal (co-native) actions, inter- and exteriorization processes.

Simultaneously a subject of cognition should retain the other eye to be objective (aloof from a man) so as to be able to analyze what «an internal eye» sees. Scanning and focusing methods, global and analytical types of perception enable to some extent «to look through an object» and to see it from different personal-activity positions, to conceive states characterizing inter-subjective reality of ***«my Ego»*** (including the attitude to oneself and to other people). This continuum includes processes, ***taking place «inside me»,*** it means to see/to identify/ to interpret ***«Oneself as any other person» – «Another-for-me»*** (in view of my intentions) and ***«Another-inside-me»*** (co-related with me but remaining one's own individuality). A «three-eye» technology enables a man to see the world through «identification matrices» - a researcher, a developer, a designer, an expert and an operator of one's external and internal actions.

It is known that the psychoeducational management in the education system is connected not only with «dialectics of positions and dispositions» (social and personality perception), *cognitive self-attribution* mechanisms (from Latin *attribuo* – I give, assign, «attribute» certain traits to myself), but also with developing some scale of values, «moral imperatives» assigning certain orientation schemes and norms (criteria) of activity. It is known that the student's self-cognition in a learning collective body is a complex process. The personality's self-identification depends in many aspects on people surrounding such a

person and on *interpersonal attractions* (from French *attraction* – «mutual attraction» to each other, «closeness» to a partner).

Often what seems to us as «direct self-knowledge» is, in fact, the result of the self-attribution process. That is the ascription of certain traits and properties to oneself. «To be» or «to seem»? – the first and the second contents express to a different extent a human nature. In medias res, «to look» is also «to be» but to other people and not to oneself.

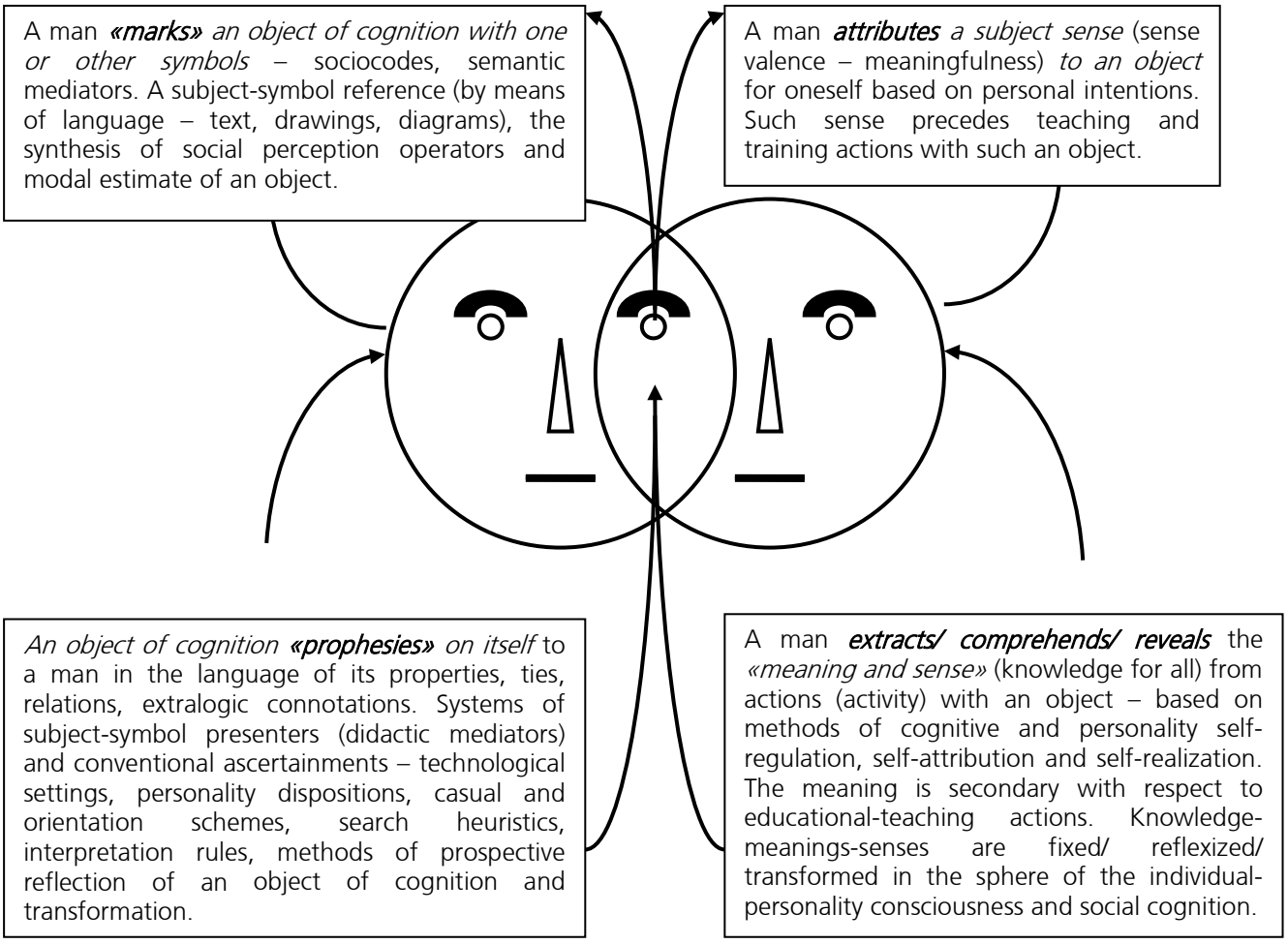

Fig. Diagram for Study of Anthrop-Arranged Educational Technologies for Formation of Subject of Professional Activity

Conclusion.

The methods and mechanisms specified by us are quite important for improving the process of students' self-learning and individual self-development. The ideas described in the Article are worked on in the current educational development system (V.V. Davydov, V.A.Lefebvre, G.P.Shchedrovitsky) but most frequent they exist as separate themes scattered in different spheres of subject-discipline knowledge. We thought it important to show how to realize the shift from subject-organized information to the student's professional knowledge, to make them be aids of the student's activity and personal development. It should be accentuated that the correlation of a real «image-ego» with that, to which a student aspires в in the course of professional identification, enables such student «to actuate» internal mechanisms of the *self-education and self-development*. The concept of a motive, as it is known, is a derivative from the Latin term «to push, to actuate». The *educational teaching* (which methods and technologies are mainly oriented at maturing but not matured functions) should herewith waken and actuate internal processes of the personality's development, self-motion and «self-action».

Reference

1. Bohm D. Science as Perception-Communication / The Structure of Scientific Theories. – 1974. Urbana. – P. 374.
2. Davydov V.V. Teoriya razvivayushego obucheniya. M., 1996
3. Dmitriev, S.V. Mental sphere of consciousness, body semantics, artplastics in srort and artistic activity /Teoriya i praktika fizicheskoy kultury. – 2007. – № 11. – P. 2-12.
4. Dmitriev, S.V., Neverkovich, S.D., Bysritskaya, E.V. Educational technologies – from the logic of interaction to the coauthorship logic /The World of Psychology. – 2011. – № 2. –P. 175-181.
5. Garz D. Paradigmenschwung und Kriesenbewu. –in Pad. Rundschau, Jg 43, 1989.
6. Lefebvre V.A. The Fundamental Structures of Human Reflexion./ Journal of Social and Biological Structures. – 1987, № 10. – P. 129-175.
7. Mickhailov F.T. Samoopredeleniye kultury. M 2003. - 272c.
8. Neverkovich, S.D. Construction of programs on physical culture for primary school / Fizichneskaya kultura: vospitanie,obrazovanie, trenirovka. – 1997. – № 2. .– P. 12-16.
9. Shchedrovitskii Basic principles in analyzing instruction and development from the perspective of the theory of activity = Об исходных принципах анализа проблемы обучения и развития в рамках теории деятельности // Soviet Psychology. — Summer, 1988. — Т. 26. — С. 5—41.
10. Shchedrovitsky G. P. Problems in the development of planning activity = Автоматизация проектирования и задачи развития проектировочной деятельности // General Systems. — 1977. — Т. XXII.
11. Wittgenstein L. Prilosophische Untersuchungen. – 1953.

CILJ INOVATIVNIH TEHNOLOGIJA SREDNJE ŠKOLE – FORMIRANJE KULTURE RAZMIŠLJANJA O SAMORAZVIJANOJ STRUCI

Stručni rad

Sažetak

Na osnovu interdisciplinarnog pristupa modernom pristupu istraživanja FK-tehnologije su analizirane, na osnovu novih teoretskih i medodičkih osnova zasnovanih na komponentama structure obrazovnog prostora. Također, i područje fizičkog treninga je locirano i opisano.

Ključne riječi: logičko-metodološki principi naučnog istraživanja, edukacijski trening, samokontrola, razvoj ličnosti, integrisana osobnost.

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