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The Method of the Content Selection for Formation of Technological Culture among Students Based on Ethnological Values

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The aim of this article is to develop a methodology of the content selection for formation of technological culture among students based on the ethnoaesthetics and the disclosure of its values. The leading idea of the study is the methods of formation of a scientific picture of the world among students, involving the development of ideas in their consciousness of the unity of the subject-spiritual and scientific-technological world, sustainable worldview, ethnoaesthetical worldview, ethnoaesthetical consciousness, etc. In the article there is the methodological tools of the "humanized" content selection of technological, ethnoaesthetical, and professional nature; principles of the content selection are defined; ethnoaesthetical context of the system of approaches to the content selection is justified; methods of the content selection are selected; systems' priority in the content selection is planned; and levels and criteria of the content selection are identified, the results of implementing of this methodology are shown.

Keywords: the content selection, ethnoaesthetical values, the formation of technological culture, principles, approaches, craft, ethnoaesthetical didactics

INTRODUCTION

The relevance of the problem

The basis of the holistic formation process of technological culture among students is its content. The most important aspect of the solution to the problem is the question: what out of the accumulated human experience in training young people to working life can be pedagogically adapted and passed on the current generation? The activity context of the folk life experience based on the sense

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culture causes ethnoaesthetical approach to the content selection of the formation of technological culture in the framework of the “humanized” knowledge.

Explore importance of the problem

Pedagogical understanding of the existing system of technological culture formation has exacerbated the problem of finding innovations, design of the optimal structure of this process, a focused selection of its detention in the framework of system analysis of ethno-cultural values. The most important condition is the keeping of cultural-historical, aesthetic traditions of a folk in the context of human culture. Justification of the aesthetics foundations in relation to the Chuvash region appears to be historical and socio-cultural analysis of such types of universal culture as mythological, cosmological, anthropological, and technological.

The ideas of humanization, "pansophia", reflected in them (Volkov, 2002), make the modelling of the content methodology in the continuity of the multi-level system “school – university – additional professional education (professional development)”.

Relying on the opinion of Professor T. N. Petrova about defending the national idea in the ethnopedagogics, we believe that in a multi-ethnic educational environment the selection of the ethnocultural content is of particular importance, since the folk, the Chuvash, expresses its “spiritual and pedagogical values that have universal sound” (Petrova, 2000). The rationale of this fact is the symbolic meaning of the pedagogical content humanity of ethnoaesthetical didactics for the Chuvash, expressed in the letter of V. A. Sukhomlinsky to G. N. Volkov (1967). The author notes that the Chuvash people is distinguished by its pedagogical features, which are reflected in the educational ideals. “I’m amazed by the humanity, humanness of pedagogics of the Chuvash people; and the high culture of the spiritual life. I think the Chuvash people, as few among other nations, has the gift of wise love for children” (Volkov, 2002).

In this context, the content selection includes the integration of knowledge, abilities and skills from the areas of ethnoaesthetics, technology and scientific pedagogics, that is able to provide the subjects of education with the continuity of attainment of ethnic, human, scientific values in the system “school – university – additional professional education (professional development)”. Structuring of the variable content is carried out with age periodization as a factor in the harmonious development of a personality not only in technological, professional, but also in emotional, spiritual, volitional, aesthetically valued field.

Status of a problem

For giving an innovative orientation for the integrative content selection, predicting the significance of the selected material in the studied process, it is necessary to study alternative systems. Methodological guidelines for selection of content and methods are the works of P. R. Atutov (1997), V. V. Kraevsky (2008), V. Okon (1990), V. A. Slastenin (2003) and others. In the content selection of technological education P. R. Atutov pays attention to the basis of "technical design", Y. L. Khotuntsev pays attention to the formation of the "scientific picture of the world" (Khotuntsev, 2002), as a didactic means of enriching the intellectual, spiritual qualities, and as a development of technical and artistic creativity in their unity (Nikitin, 2008). V. V. Kraevsky, examining the content as “a system”, describes it in “composition, structure, functions” and adds the “principles of selection” (Kraevsky, 2008). The Polish didact V. Okon (1990) justifies the “system approach” in the content selection. Highlighting aspects of culture, he attaches importance to the activities aimed at acquaintance with the monuments of culture, the creation of

young people their own values, the assimilation of cultural values. V. A. Slastenin, considering the principles and criteria of the content selection, draws attention to the "factors determining the formation of the content" of the general education (Slastenin, 2003). He defines a man as a dynamic system, evolving the identity in the process of interaction with the social environment.

Hypothesis of the study

Analysis of the theory and practice within the framework of the problem showed that issues relating to the justification of formation of technological culture among students on the basis of ethnoaesthetical values are poorly understood. Not disclosed scope of the scientific knowledge in this issue has allowed to formulate the following research hypothesis: the formation of students' continuing education of technological culture on the basis of ethnoaesthetical values will be effective if the technique of selecting and the content designing is developed, and the organizational-pedagogical mechanism is revealed to ensure the formation of technological culture among students on the basis of ethnoaesthetics.

METHODOLOGICAL FRAMEWORK

Objectives of the study

To develop methods of the content selection of technological culture formation among students on the basis of ethnoaesthetical values is provided with the following tasks: 1) identifying of the culture-centered content that is able to carry out cultural and humanistic functions of formation the students' technological culture in the system of modern education; 2) defining the guiding principles of the content selection on the research problem; 3) justification of the ethnoaesthetical context of the approach system to the content selection; 4) definition of tools for the content selection and structuring of the technological culture formation.

Research methods

To test the hypothesis and objectives of the study we employed a complex of complementary methods:

1) theoretical – analysis of the literature and regulatory documents, study, synthesis, mapping of innovative teaching practices, classification, analysis, etc.

2) empirical – research, collecting, organization of archival, field materials, monuments of material and spiritual culture; the generalization of pedagogical experience on the formation of technological culture on the basis ethnoaesthetics in the system "school – university – additional professional education (professional development)"; pedagogical observation, questionnaires, interviews of students, teachers, administration, parents to identify their attitude to the research problem, the conversation; troubleshoot of creative projects, assignments, peer review of results.

The research base

The base of the research was secondary school No. 2 in Shumerlya, secondary school No. 22, secondary school No. 28, secondary school No. 49, secondary school No. 62 in Cheboksary, ethnopedagogical classes of secondary school No. 1 in Kugesi of the Cheboksary district in the Chuvash Republic.

The principles of the content selection

The methodological guideline for determining the content selection and structuring of technological culture formation among students on the basis of ethnoaesthetics is *general principles*. Relevant to our study are general methodological principles' groups by B. T. Likhachev: "general educational material for study, civil and humanistic orientation of the content, the communication of educational material with the practice of changes in our society, and underlying systemic nature of educational material, integrative courses, humanitarian and ethical orientation of the educational content, developmental nature of the learning material, the interrelatedness and interdependence of related subjects, the aesthetic aspects of the educational content" (Likhachev, 2010). On the basis of groups of general principles, we derive special ones.

Special principles' groups of the contents selection in *science* are: the correlation of the educational material with the level of development of modern science, polytechnism, unity and opposites of logic of science and a school subject; in *the arts*: the unity of ideological content and artistic form, the harmonious cultural development of a personality, intellectual coherence and interrelation of the arts, фтв age-appropriate; in *labor education*: the socio-economic feasibility and the need of child labor, its involvement in the production activities; the link of work with science; compliance of labor to the requirements of occupations.

The principles by V. V. Kraevsky that received the scientific recognition are of selection, structuring, building the educational content. The didact allocates principles such as "the content complies with the general objectives of modern education in all of its elements and at all levels of the design; accounting for the unity of substantive and procedural sides of training; structural unity of the educational content at different levels of its formation when moving from the general to the more particular and specific forms, to its implementation in the learning process" (Kraevsky, 2008).

The signs of indicated principles of the content selection: ensuring the unity of humanization, differentiation, integration, practical orientation, activity, enhance of information technology, the development of a creative personality, – form the basis for the design of such a guiding principle, as the principle of continuity. Its ability to provide the content formation of technological culture with internal and external conditions of cultural, technological, spiritual, social and professional development of the individual is the basis of a range of ***principles***: *the integrability* of the provisions of ethnoaesthetical didactics and didactics of technology, higher education with the trends of society, technology, science, ethnic culture and identity; *the unity* of the logic of scientific theory and practice; *structuring* of scientific, social, technological and ethnoaesthetical components with the structure of cultural identity as a subject of ethnic culture; *humanization* of the ideological content of culture on aspects of the self-identification cultures: ethnoaesthetical, technological, educational, economic, social, intellectual, moral, environmental, artistic and physical culture; *interpersonal* and inter-ethnic cultural communication, culture of family relations; *the priority* of universal human values in a free and creative personality development; ethnoaesthetization of the educational process.

The methodological basis for the content selection

The methodological basis for the implementation of the principles of the content selection within the basic humanitarian culture on the basis of aesthetic values of an ethnic culture is consists of cultural, ethnic-cultural, and personal-active approaches.

The ethnoaesthetical basis of selecting, designing the content of the students' technological culture, i.e. the formation of socially adapted, whole person, is made of approaches such as ethnopedagogical (Volkov, 2002; Petrova, 2000; Kharitonov, 1999), system (Kraevsky, 2008), humanistic (Nikitin, 2011), ethno-cultural (Kharitonov, 2004), ethnoaesthetical (Nikitin, 2012), technological (Nikitin, 2011), and the practice-oriented (Kharitonov, 2006).

Ethnoaesthetical context of the system of approaches to the content selection of technological culture formation

The essential components of approaches as a system are discussed in relation to scientific and ethno-cultural values in the development of a personality. The ability to provide profoundness, strengthening of humanistic orientation of this process on the basis of ethnoaesthetics allows to prove the following approaches to methods of the content selection.

The person-oriented approach to the content selection is values-driven of ethnoaesthetical ideal of a human and aims at the implementation of the process in the design of the individual as the goal, the subject and the main criterion of its effectiveness. The determinant of the ethnoaesthetical content is the policy for a hard work, creating conditions for the activity and creation. Transformation of values determines the accounting of mentality and properties of the ethnic culture subject – freedom, humanity, spirituality, and creativity; personal qualities of students, including the features of genetic inheritance, such as physical health, thinking, feeling, hardworking; ethnic-social traditions that contribute to the formation of feelings of an owner, family man, and citizen.

The activity-technological approach to the ethnoaesthetical content selection proceeds from the principle of humanization, application of theory in practice, close ties of training and education with life. This approach provides freedom in designing the methodology of formation process of educational, spiritual, cultural and life values, creates the conditions for humane attitude to the integrated development of a personality, thus contributing to the formation of personality-multidimensional picture of the world among students, individuality of self-realization in technological, pedagogical, socio-cultural space.

The design approach to the content selection is caused by the integration of values of the past, present and future in understanding by students multidimensional scientific picture of the world in a *broad* sense, in a *narrow* sense – technological, sensory-spatial, socio-ethnoaesthetical, etc. as factors of formation of the aesthetic attitude towards the material and spiritual means of activity, motivation to convert a living space according to the laws of beauty. The content is a continuous, multilevel process. In the subsystem "*school*" – "process of design and technological activity" (Nikitin, 2008), "*university*" – "process of design-pedagogical-technological activities"; "*additional professional education (professional development)*" – "process of design-professional-pedagogical, technological activity". The implementation process is carried out by involving students in the process of design, engineering and manufacturing of products through "projects", methods of teaching technology – "educational technology of "educational systems" (Nikitin, 2008).

The ethnoaesthetical approach to the content selection of the formation of spiritual-technological worldview culture is based on the idea of socio-cultural education of an ethnic ideal of the whole person.

Methods of the content selection

The harmonious combination of principles and approaches in the content selection of technological culture formation on the basis of ethnoaesthetical values is implemented by methods, ways, and rules. Among them there stands out *structuralism* (from France) as a set of rules that allows from one object to obtain the others by permutation of its elements and other symmetric transformations; theory of selection and construction of the learning content with scientific and educational significance; linear, concentric method, spiral, mixed structure, didactic utilitarianism as a method of reconstruction of experience, which consisted in an active man's relationship with his natural and social environment.

The structural method serves as the theoretical basis for the integration of the ethnoaesthetical and technological culture content.

Priority of systems in the content selection

The function of principles, approaches, and methods in the ethnoaesthetical content selection of technological culture formation among students is determined by the priority of systems. To those we can include systems by I. P. Podlasy: 1) objectives; 2) social and scientific achievements; 3) social needs; 4) personal needs; 5) pedagogical opportunities, etc. (Podlasy, 1996). Systems highlighted below allow us to specify the ethnoaesthetical content selection of this process in the context of the goal of ethnic cultures for the preparation of students for working life taking into account the factors of mentality, nature, science, technologies, material and spiritual needs, and abilities.

The social and personal needs system is coordinated with the aim of holistic development of an active personality that has a good mind and kind heart, combining the harmony of intellect and sense, thrift and creativity, technological, pedagogical thinking and intuition. Ethnoaesthetical content in a social context acts as a tool for solving optimization problems of public and personal needs in the design of the activity content of the civil position formation, subject-activity approach to professional qualifications, professional development of educators in the system of postgraduate education in both strategies: traditional (supportive) and innovative (advanced).

The leading trend of the social and scientific achievement system is the design of methodology for the content selection of technological culture formation among students as part of the integration of ethnoaesthetical values in contemporary cultures. Its essence lies in the transformation of the archaic technologies of materials' treatment in high by use of universal equipment fitted with additional devices and machines with computer numerical control, in the materialization of ideas in the final product. The system of capabilities acts as a natural regulator of educational material mastering according to age and gender characteristics of students.

Levels of the content selection

Systems cause the selection of ***three levels*** of the ethnoaesthetical content selection submitted by design algorithms of the technological culture formation process of among students: level of *general theoretical concepts*, level of *education*, level of *didactic material*. Based on the fact that the curricula of educational institutions are prepared on the basis of the provisions of general theoretical ideas, we should consider the following types of the curricula: basic, standard and the curriculum of the institution units.

Criteria of the content selection

The quality of the content selection is determined by such ***criteria of the content selection*** of technological culture formation among students on the basis of ethnoaesthetical values as the *naturalness* of the sensemaking ideas content of ethnic values in the whole system of technological, general and professional education; *integrability* of aesthetic components, including labor, aesthetic, moral and spiritual aspects of the personal qualities formation in the basics of academic disciplines; *scientific* and practical significance of the ethnoaesthetical potential content in the technological, professional education system; *differentiability* of the ethnoaesthetical material content due to a gender and age characteristics of students; *compliance* with the volume ratio of the ethnoaesthetical values content and content of the educational modules of invariants in the structure of the project activities of students; *the compatibility* of ethnoaesthetical values with universal ones in designing of new technologies.

RESULTS

The ethnic component of educational content

The content of technological culture formation on the basis of ethnoaesthetical values was systematized and used in the integrative course "Fundamentals of technological culture: ethnoaesthetical aspect", in the integrated program "Ethnoaesthetics: household", modeled with the following blocks-modules: "Native literature", "Culture of the native land", "Art", "Music", "Technology".

The developed educational course, the program ultimately aims at the approximation to the social conditions, the practice, the implementation of the continuity principle of technological, professional, post-graduate education in the system "school – university – additional professional education (professional development)". The content of the course, the program is accompanied by the following manuals: "The concept of technological culture formation among students in the context of the pedagogical component of ethnoaesthetics", "Bases of the theory and methods of teaching technology and entrepreneurship: textbook of lectures: 4 parts", "Methodology of professional education by means of ethnoaesthetics", "Ethnoaesthetics in the practice of technological culture formation among students", etc.

Extra-curricular work

The curriculum is the basis of the functioning of the labor unions of students, school companies. Their function is to deepen knowledge in the field of archaic technology crafts, folk crafts, decorative arts, design; self-assertion in their abilities, satisfaction of creative interests, introduction to the transformative, creative, design activity.

The progress and results of the experiment

During the experiment, there was the objective for the formation of master's approach to the case among students, i.e., technology, design thinking as the action component of the technological culture. Stages of the experiment has chosen the development of recreating, creative imagination and design thinking. To identify the levels of the development among students we conducted a diagnosis on the basis of tests performed sketches, projects and arts and crafts products. Levels were

determined by 3 point-rating scale corresponding to three levels: low (3 points), average (4 points), and high (5 points).

To assess the levels of technological thinking of students in the structure of technological culture formation it was based on the following criteria: the ability to recreate images of products; to analyze, to think, to find new technological solutions; to transform archaic technologies into modern ones; to predict the economic and environmental implications; to evaluate their own project activities.

To visualize the dynamics of technological thinking formation of students we determined the average performance levels, components of which were the results of the development of recreating, creative imagination, creative thinking: high in the control group (CG) – 16,25%, in the experimental group (EG) – 23,58%; the average in the CG – 41,12% in the EG – 44,71 %; lowest in the CG – 42,62% in the EG – 31,71%. The growth was compared with the data of the control experiment (see Figure 1).

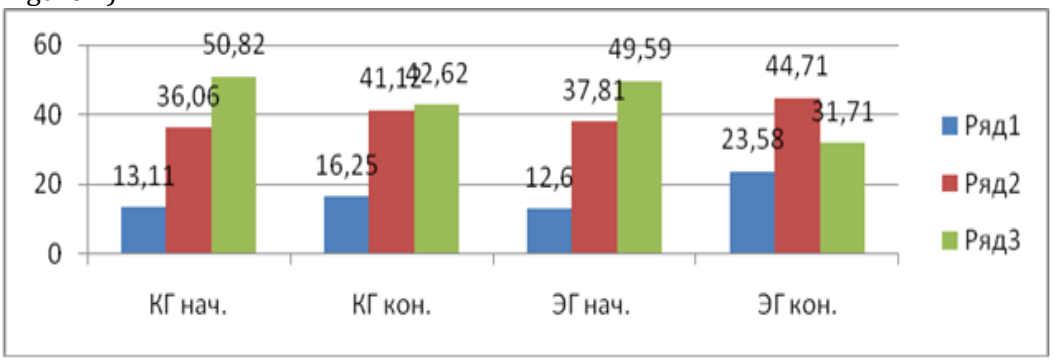

Figure 1. The initial and final levels in the dynamics of students' technological thinking formation

The diagram shows that the growth rates of technological thinking formation was in high level: in the CG – 1.23 times, in the EG – 1,87 times; average: in the CG – 1,14 times, in the EG – 1.18 times; low, conversely, the reduction: in the CG – 1,19 times, in the EG – 1.56 times.

DISCUSSIONS

The precondition that contributed to the content selection of technological culture formation among students based on the values of ethnoaesthetics are domestic and foreign achievements of pedagogical, psychological and social sciences; empirical experience of the traditional culture of education as a carrier of ideas of national pedagogics, ethnopedagogics, ethnoaesthetics in building a culture of feelings, worldview and culture in labor, technological, pedagogical, and spiritual domains.

The methodological guideline for the content selection is the setting by G. N. Volkov (2002): the formation of a rich spiritual world, aesthetic joy is only possible in the work in the name of people. Evidence of the setting importance is the following bearers of semantic content of ethnoaesthetical didactics: field, archaeological studies, ethnic traditions as an information system, material and spiritual culture as monuments of “the old paganism, known as the “old custom” (Volkov, 2002), folk art as an “epic” and amateur art of non-agricultural occupations and crafts, sewing, traditional ornaments, the interpretation of their meanings, symbols, expressed in the conventional language of pictograms.

The studied aspect of technological culture formation among students based on ethnoaesthetical values in previous studies was not considered.

CONCLUSION

The proposed regulations on the method of the content selection of technological culture formation among students based on the ethnoaesthetical values meets the following principles: according to the contents of general purpose of technological, professional, post-graduate education; lifelong general, social, spiritual, and creative development of a personality; accounting for the unity of content and procedural parties; provide for the humanization, anaesthetization of the educational process within the folk wisdom "During learning work and during working learn".

RECOMMENDATIONS

The article materials on the method of the content selection are valuable to teachers of technology, culture of the native land, native language, music, to teachers of additional education, to students of the Technology and Economics department, to teachers of pedagogical universities, and professional development, to creative educators, and to heads of educational institutions. Innovative in designing the content of technological culture formation is the transformation of ethnoaesthetical values in the category of ethnoaesthetical didactics.

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