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# The Methodology for Gradual Development of the Meta-Subject Competencies in Schoolchildren Aged 11-13 during Extracurricular Activities in Studying Arts and Crafts of the Peoples of the Russian North

# La metodología para el desarrollo gradual de las competencias de metaaprendizaje en escolares de 11 a 13 años durante actividades extracurriculares en el estudio de las artes y oficios de los pueblos del norte ruso

Alla Dmitrievna NIKOLAEVA 1; Oksana I. MARKOVA 2; Olga Petrovna OSIPOVA 3; Fekla D. TOVARISHCHEVA 4; Rimma I. EGOROVA 5; Natalia M. SOLOVIEVA 6

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## Contents



**ABSTRACT:**
The relevance of the research is determined by the fact that in the current conditions the new social demands of any society put forward the task of training the school leavers for solving various organizational, cognitive and communicative problems. Such abilities as to organize own cognitive activities, co-ordinate joint work, plan and forecast in a complex represent the meta-subject competencies of schoolchildren. The beginning of analytical thinking, lively curiosity, observation, proactive attitude, the desire for action, and the need to reason are inherent in the children aged 11-13. All these features become the basis for additional study of arts and crafts, their specificity at the level of perception in practical extracurricular educational and creative activities. The objective of this article is to determine the effectiveness of the methodology for the gradual development of meta-subject competencies for schoolchildren aged 11-13 in the process of extracurricular activities in the arts and crafts of the peoples of the Russian North. The pedagogical experiment is the leading method for studying this problem, and also the authors applied the method of expert assessments and statistical processing of quantitative findings. The experiment covered 133 grade 5-7 pupils of 3 rural schools. The methodology used for the gradual formation of meta-subject competencies of grade 5-7 schoolchildren contributed to the successful formation of meta-subject competencies, which is confirmed by the positive dynamics of their formedness. The study proved the effectiveness of the proposed methodology for the gradual formation of meta-subject competencies in schoolchildren aged 11-13, resulting in the increase in the level of the meta-subject competencies formedness by 27.2%. The research findings can be used by teachers of the basic school, when developing teaching aids in the system of higher pedagogical education, retraining and advanced training of the teaching staff.
**Keywords:** Extracurricular activities, younger adolescents, meta-

**RESUMEN:**
Esta investigación está basada en el hecho de que en las condiciones actuales las nuevas demandas sociales de cualquier sociedad plantean la tarea de capacitar a los que abandonan la escuela para resolver diversos problemas organizativos, cognitivos y comunicativos. Tales habilidades para organizar sus propias actividades cognitivas, coordinar el trabajo conjunto, planificar y pronosticar en un complejo representan las competencias meta-tema de los escolares. El comienzo del pensamiento analítico, la curiosidad viva, la observación, la actitud proactiva, el deseo de acción y la necesidad de razonar son inherentes a los niños de 11 a 13 años. Todas estas características se convierten en la base para el estudio adicional de las artes y la artesanía, su especificidad a nivel de percepción en actividades educativas extracurriculares prácticas y creativas. El objetivo de este artículo es determinar la efectividad de la metodología para el desarrollo gradual de las competencias metaestadísticas para escolares entre 11 y 13 años en el proceso de actividades extracurriculares en las artes y oficios de los pueblos del norte ruso. El experimento pedagógico es el método principal para estudiar este problema, y también los autores aplicaron el método de las evaluaciones de expertos y el procesamiento estadístico de los hallazgos cuantitativos. El experimento cubrió 133 alumnos de grado 5 a 7 de 3 escuelas rurales. La metodología utilizada para la formación gradual de las competencias de meta-asignatura de los escolares de 5 ° y 7 ° grado contribuyó a la formación exitosa de las competencias meta-temáticas, lo que se confirma por la dinámica positiva de su formación. El estudio demostró la efectividad de la metodología propuesta para la formación gradual de competencias de meta-asignatura en escolares de 11 a 13 años, lo que resultó en un aumento del 27.2% en el nivel de formación de las competencias de los meta-sujetos. Los resultados de la investigación pueden ser utilizados por los profesores de la escuela básica, al desarrollar ayudas de enseñanza en el sistema de educación pedagógica

subject competencies, arts and crafts, technology, heritage of the peoples of the North

superior, el reciclaje y la formación avanzada del personal docente.
**Palabras clave:** actividades extracurriculares, adolescentes más jóvenes, competencias meta-temáticas, arte y artesanía, tecnología, patrimonio de los pueblos del norte

# 1. Introduction

The problem of developing key competencies in schoolchildren, which include meta-subject competencies, is one of the most urgent in global education. At the same time, there is no single agreed list of key competencies, since competencies are the order of the community to train its citizens, and such a list is largely determined by the agreed position of the society in a certain country or region. It is not always possible to achieve such an agreement (Torres, 2010). Thus, during the international project "*Identification and selection of key competencies*" implemented by the Organization for Economic Cooperation and Development and by the Swiss and U.S. National Centers for Education Statistics, no strict definition of key competencies was developed. During the Council of Europe Symposium devoted to "*Key competencies for Europe*", only an indicative list of key competences was defined (Hutmacher, 1996; Hutorskoy, 2005). In the Russian Federation, the notion of 'meta-subject competencies' is stipulated in the Federal State Educational Standards for General Education (hereinafter GE FSES), which were approved in 2010.

In the foreign pedagogical practice of school education the notion of 'meta-competence' can be found, which is interpreted as "abilities to conduct everyday life" (Crick, 2008; Paquette, 1999; Nygren, 2015; Zeer, 2005).

Consequently, meta-subject competencies can be considered as the ability to organize own cognitive activities, the skills to undertake concerted efforts, plan and predict. At the same time, the school is unable to form a sufficient level of schoolchildren's competence development, contributing to the effective solution of problems in all areas of activity and in all specific situations, especially in a rapidly changing society characterized by the emergence of new areas of activity and new situations. Therefore, the formation of meta-subject competencies in schoolchildren should be an interrelated process, where extracurricular activities can contribute to a better quality of their formation in addition to the lessons. The above mentioned characteristics are fully inherent in arts and crafts of the peoples of the North, the pedagogical potential of which can be used to develop meta-subject competencies in schoolchildren in the *Technology* subject area, as the program of classes in arts and crafts provides a holistic integrated course, taking into account psychological regularities in the formation of general labor, special knowledge and skills, as well as age characteristics of pupils. The research is aimed at identifying the effectiveness of gradual formation and development of meta-subject competencies in the *Technology* subject area during extracurricular classes in arts and crafts of the peoples of the North.

The following assumption was proposed as a hypothesis of the research: extracurricular activities in the arts and crafts of the peoples of the North in the educational process of the basic school will contribute to the formation of meta-subject competencies in schoolchildren in case of defining and applying a methodology based on their graded formation with the use of active teaching methods and aids.

# 2. Literature review

The theoretical and methodological basis of the research is formed by the subject-activity approach (Asmolov et al., 2008; Vyigotskiy, 2006), which enables to define the general strategy of the simulated process, considering a younger adolescent as the subject of the simulated process possessing the abilities of self-development, self-determination, and self-improvement. The competence approach focuses on the accumulation of educational knowledge as a basis for the activity of the younger adolescents, being the condition for development of meta-subject competencies (regulative, cognitive and communicative ones), which allows strengthening the practice-oriented educational process (Hutorskoy, 2012; Zimnyaya, 2005). The use of the potential of arts and crafts of the peoples of the North to form meta-subject competencies is highlighted in the studies that reveal their role in the labor education of schoolchildren; various studies provide insight into organization, technologies of traditional kinds of arts and crafts of the people of the North; the improvement of the labor education of schoolchildren with the means of arts and crafts of the peoples of the North, etc. (Neustroev, 2001; Petrova, 2007; Tatarnikov, 2004).

# 3. Materials and methods

The study was conducted in 2012-2017 at three schools in different districts of the republic; three experimental groups (hereinafter EG), including EG-1 (21 persons), EG-2 (22 persons), EG-3 (25 persons) and one control group (KG consisting of 65 persons) were formed; they were identical in age and sex composition and made in total 133 children. Extracurricular classes in the *Technology* subject area were held twice a week in the form of art and crafts workshops. The total handcrafting hours amounted to 144 per year; the training program was designed for 2 years. Technology teachers, basically, have working experience from 5 years and above and completed advanced training course on the FSES introduction problems. The ascertaining experiment (2012-2013) included the formulation of the goal and objectives of the study, the comprehension and analysis of the research problem, the diagnosis of the initial level of meta-subject competencies development in adolescents. In the control group, the sessions were conducted in a traditional form of training and were not focused on monitoring formation of meta-subject competencies in adolescents. The group of experts consisted of 5 people with experience in this field (school teachers, lecturers of the Teacher Training Institute).

The methodology for gradual formation of schoolchildren's meta-subject competencies in the process of extracurricular activities in arts and crafts of the peoples of the North was defined, which was implemented in 3 stages. The comprehensive diagnostic tasks contained 15 assignments. For example, regulative competencies were identified on the basis of a questionnaire containing 5 situations that have multiple solutions; the methods for

identification of the ability to find differences in the objects (Galperin & Kabylnitskaya, 1974), a test for attention (search for differences in images); *Sample and Rule* Wenger's methods (1985) (revealing the level of visual-figurative thinking development). Diagnostics of the peculiarities of the search planning development according to A.Z. Zak method (2002) was aimed at identifying skills to draw up an action program (cognitive competencies). Using the *Carpet* technique (Ovcharova, 2003) allowed to study the level of formed skills in pupils' group interaction in the situation of the presented learning assignment (communicative competencies).

Stage 2 – the forming experiment (2013-2015) was planned based on the specificity of the *Technology* subject area as a creative design and technological system, including the solution of learning assignment of designing, technological and research nature, such as: modeling, selection of templates and semi-finished parts, materials for handicraft making; choice of options for artistic processing of materials; selection of tools and devices for handicraft processing; selection of the sequence of actions (operations, techniques, etc.); drawing up a flow chart for the handicraft manufacture; marking the handicraft in accordance with the drawing; quality control of product parameters (dimensions, shape, etc.); self-control in the sequence of executing technological operations; selection of forms for assessing the results of technological (project) activities, etc.

All these technological operations, ultimately, represent the logic of manifestation and formation of adolescents' meta-subject competencies. The methodology includes training methods and tools used to form meta-subject competencies: introductory games, presentations, excursions to museums of applied art, creative workshops of folk craftsmen, open-air classes, group lessons in educational and practical laboratories (for woodworking, metalworking, sewing and so on). During the first year of arts and crafts workshops, the majority of assignments were intended for the group (30% of the total), paired (35% of the total) and individual (35%) work. The assignments were entertaining (in form, content, story line, etc., by the method of solution or the unexpected result); they differed in the levels of complexity, in several ways of implementation on the basis of certain meta-cognitive knowledge.

The project method was defined as the leading method for gradual formation of meta-subject competencies in the art and crafts workshops. This method was aimed at teaching pupils to search for the idea and design of the project, formulating the problem together with the teacher; using information sources by children (dictionaries, reference books, the Internet resources); organizing joint projects (preparation for holidays, exhibitions, competitions, interior design, production of socially-oriented works: gifts, handicrafts for preschoolers, etc.), carrying out design assignments (historical aspects of the handicraft, a variety of labor objects made, analysis of the applied function of the handicraft, selection of literary support of the project, etc.), obtaining the final result – a tangible product in the form of a handicraft using technologies for processing different materials (natural, plastic, paper, textiles, etc.)

The methodology can be exemplified by one of the projects: "Making a protective amulet in the national style". The fulfillment of the assignment consists of the following stages, where different forms and methods of instruction are used. At the stage of studying concepts and working with literature (What is a protective amulet? Why is it used? What is the history of the amulet origin?) the teacher used the information and communication method. When getting acquainted with the concepts of 'national style', 'the use of national ornaments in the manufacture of amulets', 'the symbols of ornaments of the peoples of the North', the adolescents studied their historical aspects. The applied function of the handicraft was analyzed in the form of a discussion with the pupils during the excursion to the museum. At the next stage, when executing sketches and collecting a bank of ideas, the method of initiating thinking was applied (brainstorming, morphological box, method of analogies, etc.). Then in the group form the best idea was selected, color layout was elaborated in detail, the material was chosen, the flow chart for making the amulet was drawn, followed by artistic processing of the material (leather, fur, horsehair) and practical implementation of the project (fabrication, work with the material). The teacher's role at the session was to control the technological actions of adolescents in accordance with the rules and requirements (labor protection, aesthetics, ecology, ergonomics, design, compliance with technological conditions, etc.), consultations and adjustments. At the final stage, the self-assessment and evaluation of the finished handicraft was carried out in the form of presentation and critical design review of the completed project (handicraft).

# 4. Results

Diagnostics of the level of adolescents' meta-subject competencies development included a component composition of 3 levels: high, medium and low. The high level of development of meta-subject competencies in the schoolchild is characterized by the pupils' independence in determining the goals and means of their implementation in their creative activities; the ability to formulate questions to themselves and others; the adequacy of assessments and judgments about themselves, their qualities and capabilities, the reasons for success (failure) in learning; independence in the analysis of the situation and the conciseness of its elements; ability to fully and accurately express their thoughts in standard and unusual situations.

The medium level of adolescents' meta-subject competencies development is characterized by sufficient independence in determining the purpose of their activities and thinking over the means for their implementation, building a sequence of events, taking into account the consequences of the decisions made; formulating various types of questions from case to case; independence in a standard situation and in an unusual situation under the teacher's guidance to analyze the current situation, comprehend its elements, analyze what is happening, analyze the upcoming activities, behavior, predict the likely outcomes; ability to fully and accurately express their thoughts in standard situations.

The low level of adolescents' meta-subject competencies development is characterized by insufficient ability (or inability) to set the goal of the activity, to build a sequence of events, taking into account the consequences of the decisions made, as well as forecasting possible changes in the problem situation; inability to formulate questions aimed at obtaining the necessary information, copying simple questions in educational activities; inadequate

assessments and judgments about themselves, their qualities and capabilities, about the reasons for success (failure) in the learning; inability to analyze the situation, to comprehend its elements, to correlate own actions with the situation and coordinate them in accordance with changing conditions; inaccuracy and incompleteness of their thoughts on the problem being solved.

The levels of formedness of schoolchildren's meta-subject competencies were determined by the number of points: the high level scored from 30 to 25 points, the medium level was ranked from 24.9 to 20 points, and the low level corresponded to 19.9-0 points.

**Table 1**
Comparative data for the levels of adolescents' meta-subject competencies formedness

| **Components of meta-subject competencies** | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Cognitive** | | | | | | **Regulative** | | | | | | **Communicative** | | | | | |
| Stages | **ascertaining** | | | **forming** | | | **ascertaining** | | | **forming** | | | **ascertaining** | | | **forming** | | |
| Levels | Low | Medium | High | Low | Medium | High | Low | Medium | High | Low | Medium | High | Low | Medium | High | Low | Medium | High |
| EG-1 | 71.4 | 28.6 | 0 | 0 | 80.6 | 19.4 | 57.1 | 42.9 | 0 | 0 | 71.4 | 28.6 | 66.6 | 28.6 | 4.7 | 0 | 85.7 | 14.3 |
| EG-2 | 63.6 | 27.4 | 0 | 0 | 72.7 | 27.3 | 59.1 | 41.9 | 0 | 0 | 68.2 | 31.8 | 72.7 | 22.3 | 4.5 | 0 | 72.7 | 27.3 |
| EG-3 | 64 | 36 | 0 | 0 | 60 | 40 | 60 | 36 | 4 | 0 | 72 | 28 | 60 | 32 | 8 | 0 | 76 | 24 |
| CG | 54.6 | 45.4 | 0 | 55.3 | 43.1 | 1.6 | 69.2 | 30.8 | 0 | 61.5 | 38.5 | 0 | 61.5 | 36.9 | 0 | 43.1 | 55.3 | 1.6 |
| Average indicator: high level increased by 27.2 % | | | | | | | | | | | | | | | | | | |

The data given in Table 1 indicate that 63.8% of the schoolchildren in three experimental groups, i.e. 68 pupils from the three schools participating in the study, had a low level of meta-subject competencies at the ascertaining stage. Using the methodology for gradual formation of schoolchildren's meta-subject competencies at the handcrafting lessons devoted to the arts and crafts of the peoples of the Russian North showed that a two-years' cycle of arts and crafts workshops helped 5-7 grade pupils develop their ability to independently plan and predict their own cognitive and creative activities , demonstrated their proactive attitude in relation to the situation, as evidenced by the results of the control stage: the level of meta-subject competencies formedness has increased by 20.8% in EG-1, by 28.8% in EG-2 and by 30.6% in EG-3, making on the average 27.2% in all experimental groups (Table 1). In the control groups, there were no significant changes in the level of development of adolescents' meta-subject competencies.

# 5. Discussion

The folklife culture of any nation in the world, formed for millennia, has a significant pedagogical potential for the development of the moral foundations of the individual (Billings, 1995; Erickson, 1995). Ethnic culture is manifested in many forms, including, arts and crafts. The value of the objects of folk art consists in expressing the people's understanding of the essence of good and evil, the idea of social and spiritual values (Kellman, 1995).

In Yakutia, one of the most multinational regions of Russia, the indigenous ethnic groups have a rich artistic and musical culture, original folklore, a special system of genres (Petrova, 2007). The regional and national features reflected in the handicrafts of the peoples of the North are based on the fact that in the extreme conditions of the Russian North a person develops a special holistic perception of the surrounding world as a way of surviving in these conditions. For centuries, an individual coexisted in harmony with the society and nature in the conditions of severe climate, forming skills and perseverance to live and solve problems. All these factors left an imprint on the arts and crafts of the peoples of the North. High technical skills and feeling for art, reflected in the beauty of proportions, the plastic perfection of forms, the uniqueness of color and rhythmic constructions, made simple everyday objects genuine works of folk applied art, in the creation of which Yakut masters show not only aesthetic value, but also their craftsmanship, abilities and skills, using multiple spheres of human existence in the extreme conditions of the North (Neustroev et al., 2016; Nikolaeva & Savvinov, 2016).

Arts and crafts are initially focused on the development of the child's personality and, in particular, on revealing such qualities as proactivity, self-expression, creativity and flexibility of thinking. Consequently, extracurricular classes on arts and crafts can contribute to the process of forming schoolchildren's meta-subject competencies. Various methodical tools consistently form an emotional value-conscious attitude in the 11-13 year old schoolchild to diligent creative work as one of the main advantages of a person; awareness of the harmonious connection of the world of things with the world of nature and the responsibility of man for maintaining this harmony; understanding of the value of cultural traditions reflected in the objects of the material world, their commonality and diversity, interest in their study (Tatarnikov, 2004).

In the process of integrating intellectual and subject-practical activities of children in extra-curricular activities with arts and crafts of the peoples of the North (using individual, paired, group forms of organization) adolescents learn to find the information required for implementing the handicraft in the textbooks and workbooks; analyze the

proposed information (handicraft samples, simple drawings, sketches, schemes, models), compare, characterize and evaluate the possibility of using this information in their activities; analyze the handicraft design: to single out parts and sections of a product, their form, mutual arrangement, to define the ways of connecting the parts; to perform educational and cognitive actions in a materialized and mental form, to find an appropriate speech form for their explanation; to use signs and symbols for solving problems in mental or materialized form; perform symbolic actions of modeling and model transformation, to work with models.

The fulfillment of assignments requires children to plan the forthcoming work, to correlate their actions with the set goal, to establish cause-effect relationships between the actions performed and their results, to predict the actions necessary to obtain the planned results. The materialization of the activity results in a specific handicraft allows pupils to carry out most effectively self-monitoring of the practical actions performed, adjusting the course of practical work. Assignments that instruct pupils to follow the teacher's instructions while making a handicraft or are given in other information sources (textbooks, didactic material, etc.) also enable to form the necessary meta-subject competencies in schoolchildren. Instructional techniques and tools used while carrying out most types of work are aimed at the formation of the ability to formulate their own opinions and options for decision in children, present them in a well-argued manner, listening to opinions and ideas of comrades, to take them into account in organizing their activities and working together (Neustroev, 2001).

# 6. Conclusion

In the course of the research, the pedagogical potential of the decorative and applied arts of the peoples of the North has been updated to form the meta-subject competencies of younger adolescents, which enriches the methodology of extracurricular activities at school. The methodology based on the use of active forms of classes made it possible to improve the efficiency of integrating the elements of the ethnic culture of the peoples of the North with the content of academic subjects, as evidenced by the above results. This contributed to the achievement of such meta-subject results as: the development of artistic imagination and creative thinking; artistic intuition and memory; perception and judgment about works of arts and crafts as the basis for the formation of communicative skills; which provide the opportunity for younger adolescents to transform the modes of activity (expertise-knowledge-skills) from the purpose of training into a means of developing their abilities. The study showed that the development of the meta-subject competencies of younger adolescents during extracurricular activities in the arts and crafts of the peoples of the North can be provided only by the unity of the schoolchildren's curricular and extracurricular activities. Schoolchildren learned to supplement, change, transform familiar material in new situations; find new solutions, be independent and initiative. The interest in the national culture and motivation to engage in arts and crafts has increased significantly. Judgments and assessments about arts and crafts have become more objective and informative.

Thus, the goal of the research is achieved and confirmed by the positive dynamics of the findings. The research results can be used to develop educational materials at school, in the system of higher pedagogical education, retraining and advanced training of pedagogical personnel. The conclusions do not pretend to be an exhaustive solution to the problem under study. The research can be continued aiming at identification of other methods and technologies for the formation of the adolescents' competences under study.

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1. North-Eastern Federal University named after M.K. Ammosov, Yakutsk, Russia, allanikol@list.ru
2. North-Eastern Federal University named after M.K. Ammosov, Yakutsk, Russia, oi.markova@s-vfu.ru
3. North-Eastern Federal University named after M.K. Ammosov, Yakutsk, Russia, op.osipova@s-vfu.ru
4. North-Eastern Federal University named after M.K. Ammosov, Yakutsk, Russia, tovarisheva_f@mail.ru
5. North-Eastern Federal University named after M.K. Ammosov, Yakutsk, Russia, erimig@mail.ru
6. North-Eastern Federal University named after M.K. Ammosov, Yakutsk, Russia, kmpf404@mail.ru

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[Index]

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