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**DEVELOPING FLEXIBLE COMPETENCIES IN PRIMARY SCHOOL  
STUDENTS IN A COLLABORATIVE LEARNING ENVIRONMENT**

5.8.1. – General pedagogy, history of pedagogy and education

**AUTHORS ABSTRACT**

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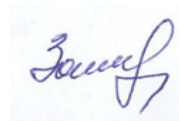
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## 1. GENERAL CHARACTERISTIC OF THE WORK

**The relevance of research.** In an era of global change, when subject knowledge is rapidly becoming obsolete and gradually being replaced by automated systems, flexible competencies are particularly in demand. They focus on students' development of successful communication skills, analysis and application of knowledge in the course of problem solving, effective cooperation with others, as well as planning and evaluating their own learning activities.

Based on this, one of the leading tasks of the modern education system is the search for optimal methods for developing students' flexible competencies. In this regard, primary school students face serious difficulties, as they need targeted pedagogical assistance in developing social skills strategies for further integration into adult life.

One of the most effective methods for developing flexible competencies in primary school students is the method of learning in collaboration. In accordance with the updated provisions of the Federal State Educational Standard for Primary General Education of the third Generation, the following requirements are becoming relevant: "implementation of cooperation", "communication and joint activities", "mastering teamwork". At the level of the next level of training, the highlighted requirements acquire a clearer practical orientation and assume "the development of personal qualities that contribute to solving life's non-standard tasks for an adequate orientation in the surrounding reality", "mastering the techniques of educational cooperation and social interaction with representatives of different age categories in joint educational, research and project activities", as well as "formation of experience in applying universal educational actions in life situations to solve practical problems".

The collaborative learning process, based on a person-centered and humanistic approach, involves building close social contacts with peers and adults and promotes versatile development of the student's personality. Moreover, educational cooperation meets the demand of society, focused on the activation of the human factor.

According to the content of the updated Federal State Educational Standard of Higher Professional Education, primary school teachers should ensure, first of all, the personal development of the younger student, as well as contribute to the formation of at him system knowledge as part of the development of teamwork skills in the learning process. At the same time, the development of social experience is achieved by mastering flexible competencies. These competencies, as emphasized in the standard, form the basis for effective interaction with people and contribute to successful education in the future.

**The degree of elaboration of the research problem.** *In the Russian scientific and pedagogical literature* the concept of "flexible competencies" has been studied in the context of different areas and levels of training in higher education by such researchers as: O.V. Barinova, Y.V. Pavlova, O.Ya. Ponomareva I.I. Cherkasova, T.A. Yarkova. This problem has been studied in postgraduate education N.V. Lik, S. K. Novikov, E. I. Ogareva, Kh.K. Sadullaev; in the school system, the problem of forming flexible competencies was discussed in the works of D.S. Ermakov, N.Yu. Kostina, L.I. Nikolaeva, T.V. Nikolaeva, I.S. Mednik, O.L. Taranova, E.A. Eremkina and others). Interest in research of the collaborative learning process began in the 1970s of the last

century. The ideas of cooperation pedagogy were developed and systematized by a group of innovative Russian teachers, including: S.L. Soloveychik, V.F. Shatalov, Sh.A. Amonashvili, V.A. Karakovsky, I.P. Volkov, V. M. Matveev, L. A. and B. P. Nikitin, etc. In the Russian pedagogy, the issues of studying the theory and practice of teaching in cooperation were dealt with by V. V.K. Dyachenko, I. V. Ivanova, M.G. Kazakina, N. V. Litvinenko, M.A. Mkrtchyan, N.N. Peretyagina, E.S. Polat, A.G. Rivin, N.N. Filyarovskaya etc. The problems of forming student relationships and analyzing the results of mutual assessment in joint activities are described in the works of such scientists as: N.V. Barilenko, G. G. Kravtsovbut, E. E. Kravtsovouch, A.K. Markovouch, T.A. Mathis, T.A. Repina, I.M. Sinagatullina, T.M. Sorokina, R.B. Sterkina, T.A. Runova, B. B. Bogdanova, V.K. Dyachenko, V.P. Panyushkin, V.V. Tsymbalbut etc.

*In foreign studies* the problem of forming flexible competencies (soft skills) is revealed in the works of the following scientists: D. Almog, A. Asperin, R. Athayde, H. Chassidim, E. Chell, S. Cranfield, F. Fernandez, A. Fixsen, and others. Important for our research are the works that reveal the features of the method of training in collaboration, such researchers as: E. Aronson, K.S. Cook, D.Johnson, R.Johnson, R.Slavin, J.Sharan, S.Sharan. Special attention should be paid to the works of practical scientists, which analyze the conditions for the formation of educational cooperation, including: R.Barrett, S.Dalfen, M.Rothbart. The educational potential of the considered foreign experience in relation to our research consisted in relying on principles of humanistic pedagogy (J.Pestalozzi, 1981; M.Montessori, 1915; R.Steiner 1995) and the ideas of the reformers (H.Hentig, 2012), revealing the effectiveness of active and interactive, educational, project-based and interdisciplinary forms and methods; learning in collaboration; maintaining the traditions of school holidays (Winter and Spring Fairy Tale Festival, German Culture Day, Literary Courtyard); social rituals and rules (Morning Circle). These forms are aimed at developing personal responsibility and intellectual and creative abilities of younger schoolchildren through their joint work.

The conducted analysis of domestic and foreign constructive content foreign experience on the problem of research allows us to state that the problem of forming flexible competencies of primary school students in the context of learning in cooperation in accordance with modern challenges in the field of education is not sufficiently studied.

Thus, the analysis of the degree of development of the research problem allows us to isolate **controversies** between:

- the need of society for primary school graduates who possess flexible competencies and are able to effectively cooperate with people around them and lack the level of formation of these competencies;
- increased requirements for the teacher in mastering active skills methods and technologies and lack of readiness to use them in the process of developing flexible competencies in younger schoolchildren;
- the need for software and methodological support of the formation process flexible competencies primary school students and insufficient development of pedagogical conditions that contribute to the effectiveness of this process in the context of learning in cooperation.

The identified contradictions determine **research problem**: what are the pedagogical conditions and content-procedural model of education? flexible competencies for younger students in a collaborative learning environment?

The problem determined the choice **research topics** "Developing flexible competencies in primary school students in a collaborative learning environment».

**Research objective**: to develop and test a content-based procedural model and pedagogical conditions for its formation flexible competencies for younger students in a collaborative learning environment.

**Research object**: formation process flexible competencies for younger students.

**Subject of the study**: content-procedural model and pedagogical conditions of formation flexible competencies for younger students using the collaborative learning method.

**Research hypothesis**: process formations flexible competencies for younger students in a collaborative learning environment will be effective by email address, by:

1) identification and use of the pedagogical potential of the method of teaching in cooperation in the formation of flexible competencies of primary school students;

2) development and implementation content-based and procedural information models formation of flexible competencies of primary school students in a collaborative learning environment;

3) justification and implementations special ones pedagogical conditions of formation flexible competencies for younger students using the collaborative learning method.

Based on the set goal and hypothesis, we define **research objectives**:

1) identify the essence of the formation process flexible competencies for younger students in a collaborative learning environment;

2) to reveal the pedagogical potential of the method of teaching in cooperation in the formation of flexible competencies of primary school students;

3) to develop and test it content-based and procedural information formation model flexible competencies for younger students in a collaborative learning environment;

4) to reveal pedagogical conditions of formation flexible competencies for younger students in a collaborative learning environment and experimentally test their effectiveness.

**Methodological base of the study** make up: An axiological approach (A.M. Bulynin, B.S. Gershunsky, I.F. Isaev, N.D. Nikandrov, V.A. Slastenin, E.N. Shiyanov, etc.) that considers problems of forming flexible competencies as modern educational challenges developed areas of leadership, collaboration and life success; competence-based approach (V.I. Baydenko, P.P. Borisov, A. A. Verbitsky, V.F. Gabdulkhakov, I.A. Zimnyaya, E.F. Zeer, G.I. Ibragimov, A.R. Masalimova, J.Raven, M.V. Ryzhakov, A. V. Khutorskoy, M.A. Choshanov), aimed at purposeful comprehension of the application of a set of knowledge, skills and methods of activity in relation to an interdisciplinary range of issues; activity-based approach (V.I. Andreev, K.A. Abdulkhanova-Slavskaya, L.S. Vygotsky, I.A. Zimnyaya, A.N. Leontiev) as the main basis for the education of the individual and the development of competence is carried out through the use of an active method of learning in cooperation, which contributes to the solution of significant life

problems; a systematic approach (A.P. Belyaeva, L. Ya. Zorina, T.A. Ilina, P.T. Frolova and others.) is provided by the functioning of the complex flexible competencies: communication, volitional and intellectual abilities.

**Theoretical basis of the study** performed by: scientific research devoted to disclosure social purpose of primary education, its essence, content and organizational problems (N.F. Bunakov, V.P. Vakhterov, V.I. Vodovozov, D.D. Semenov, V. Ya. Stoyunin, D.I. Tikhomirov, K.D. Ushinsky, etc.); the main provisions of the theory of key or flexible ones competencies (A. G. Kaceprzak, I.D. Frumin, A. V. Khutorskoy, G. A. Zuckerman, R. Barnett); provisions on conceptual ideas of cooperation (I.P. Volkov, N. A. Kopylova, S.L. Soloveychik, V.F. Shatalov, M. P. Shchetinin); research in the field of content and methods of primary education (V.V. Davydov, L.V. Zankov, N. A. Menchinskaya, D.B. Elkonin, and others).

**Research methods:**

- theoretical requirements: comprehensive analysis of regulatory documents; analysis of psychological, pedagogical, methodological and special literature on the subject of selected one the problem; summary of research results; study of methodological and pedagogical experience; modeling and designing the learning process;

- empirical: a pedagogical experiment; survey; author's questionnaire; E.V. Korotaeva's test to identify readiness levels for learning in interactive mode; D.B. Elkonin's test aimed at identifying levels of cooperation; observation; qualitative and quantitative methods of statistical processing of experimental data; criteria t-Student's name; G-character criteria; correlation analysis.

**The empirical basis of the study was:** MAOU "Lyceum-Engineering Center" of the Sovetsky district of Kazan; MBOU "Tatar-English gymnasium No. 16" of the Privolzhsky district of Kazan. The total number of participants in the study was 140 teachers, 120 students in grades 1-4.

**Organization and stages of the study:**

The study was conducted in stages between 2019 and 2022.

*At the first-ascertaining stage (2019-2020)* the research work on the study and analysis of psychological, pedagogical and methodological literature on the research problem was carried out. At this stage, the main research positions are formulated, as well as the categorical and conceptual apparatus. One of the main tasks of the stage was to clarify the definition of "flexible competencies in a collaborative learning environment". Analyzed domestic and international constructive foreign experience on the problem of formation of a legal entity flexible competencies for younger students. Identified The article also substantiates the pedagogical potential of the method of teaching in cooperation in the formation of flexible competencies of younger schoolchildren. Search and research work was carried out to identify the content and forms of organization of the formation process flexible competencies primary school students; criteria, their indicators and levels of education flexible competencies for younger students.

*At the second-formative stage (2020-2021)* an empirical test of the hypothesis is organized, on the basis of which the following methods are developed: content and process information system model and pedagogical conditions of formation flexible

competencies for younger students in a collaborative learning environment. The goal of the stage was to conduct an experimental test content-based and procedural information models and pedagogical conditions that contribute to improving the effectiveness of education development flexible competencies for younger students in a collaborative learning environment. Verification of the validity of conclusions was carried out, formulated by at the first stage of the study.

*At the third-control stage (2021-2023)* a consistent process of systematization and interpretation of conclusions, testing of results in primary school is implemented. At this stage, statistical processing of experimental data was performed in order to determine the dynamics of formation levels flexible competencies for younger students in a collaborative learning environment.

**Scientific novelty of the study** consists in the fact that:

1. The article reveals the essence of the process of forming flexible competencies of junior schoolchildren in the context of learning in cooperation, which consists in providing pedagogical support for positive interaction between students aimed at developing a complex of metasubject, interdisciplinary, multidimensional (mental processes and intellectual skills), multifunctional (solving problems in various spheres of life) competencies of junior schoolchildren in their organized joint educational activities.

2. Developed and implemented content-based and procedural model of formation flexible competencies for younger students in a collaborative learning environment containing *target* (goal: forming flexible competencies for younger students in a collaborative learning environment; tasks: social development of primary school children and personal interest in the formation of flexible competencies and a positive attitude to the forms of learning in cooperation); *theoretical and methodological approach* (approaches: axiological, epistemological, praxeological and principles: cognitive, logical, informational); *informative* (programs but formations flexible competencies for younger students in a collaborative learning environment; technological maps of classes and scenarios of events for the formation of the educational process. flexible competencies for younger students in a collaborative learning environment); *procedural level* (stages: propaedeutic; basic; reflexive-evaluative and pedagogical conditions for the formation of flexible competencies in primary school students in a collaborative learning environment); *technological* (methods: test methods, a collaborative learning method etc.; tools: mobile devices (smartphone, tablet), animated series ("Kaleidoscope of Professions"), videos ("Jumble") etc.; forms: informational-receptive, interactive, individual and group consultations, group forms of work, etc.); *performance and evaluation report* (criteria: motivational-target, content-semantic, estimated, organizational chart, reflexive and predictive analysis, operational-activity approach and their indicators) blocks.

3. Identified and justified pedagogical conditions that contribute to the effective formation of flexible competencies for younger students in a collaborative learning environment, including: using the ideas of humanistic and reformist pedagogy in the formation of the state educational system. flexible competencies primary school students; implementation of programs development of methodological recommendations for



teachers on optimizing the process of developing flexible competencies of primary school students in a collaborative learning environment.

### **Theoretical significance of the study:**

1. Disclosed in the study the essential characteristics of the process of forming flexible competencies of primary school students in the context of learning in cooperation (organized joint educational activities, pedagogical support for positive interaction between primary school students; focus on the development of a complex of metasubject, interdisciplinary, multidimensional, multifunctional competencies) make a certain contribution to the development of the theory of pedagogy of primary education, as well as in the development of theories and concepts of education and socialization personality of primary school students, taking into account the socio-cultural conditionality of the educational process.

2. Identified teaching staff potential of the collaborative learning method as the most productive way for a modern primary school to develop students flexible competencies, which provides teachers with the opportunity to effectively develop the ability of younger students to clearly argue, develop their critical thinking, a high level of educational motivation, readiness to build respectful relationships with others regardless of religious, national and social differences, and form independence and cohesion of the class team – creates a real perspective in getting rich types, models, and strategies of teaching primary school students, expanding the boundaries of their application, and evaluating their pedagogical effectiveness.

### **Practical significance of the study:**

1. Suggested features in the study criteria, levels and indicators generated by new features flexible competencies for younger students in a collaborative learning environment: *motivational-targeted approach* (the presence of motivation to work in a group; the ability to set and realize the goal; the presence of a motive for achieving the goal based on individual personal characteristics); *content and meaning analysis* (awareness of the essence of flexible competencies, their content fullness and the younger student's attitude to the content training sessions to develop their flexible competencies); *estimated* (attitude to working in a group, independence, as well as the degree of self-realization in working in a group); *organizational chart* (ability to organize themselves, the way they interact in a group, and the attitude of a primary school student to the requirements for working in a group); *reflexive and predictive analysis* (reflecting on your own behavior, the nature of attribution of responsibility, foresight and prediction of personal and socially significant consequences of their actions); *operational-activity approach* (mastering the skills and abilities of working in a group, further application of skills and tactics of working in a group by younger students, striving to improve the skills of using tools and methods of working in a group) - make a practical contribution to a set of assessment methods that allow you to diagnose the levels of formation of flexible competencies of younger students in a collaborative learning environment and, if necessary, timely correct them this process.

2. Developed by programs but extracurricular activities for primary school students aimed at developing their flexible competencies in a collaborative learning environment, methodological recommendations for teachers, lesson flow charts, and scenarios of educational activities. flexible competencies for younger students – they create real



prospects for the development of value bases for building educational systems in the modern socio-cultural space in primary education institutions, complement and expand the educational and methodological support of the educational process., and also They can be used in practical activities by teachers of primary and additional education, as well as classroom teachers in extracurricular activities.

**Reliability and validity of the research results** due to the correct using methodology and methods of research; comprehensive support for on the theoretical and methodological foundations of the problem of modeling the content of education, on fundamental theories on the formation problem flexible competencies primary school students; application of scientific research methods in accordance with the purpose and objectives; experimental verification of the effectiveness of implementation content-based and procedural information models of developing flexible competencies in primary school students in a collaborative learning environment; personal experience in the role of for a teacher primary education.

**Personal contribution by the author** it consists in the theoretical justification of the entity formation of flexible competencies in primary school students in the context of learning in cooperation; identification of factors in this process; disclosure of the pedagogical potential of the method of learning in cooperation in the formation of flexible competencies of primary school students; development content-based and procedural information models of formation of flexible competencies in primary school students in a collaborative learning environment; identification and justification of pedagogical conditions that contribute to the effectiveness of the research process; determination of levels, criteria and indicators of formation of flexible competencies in primary school students in a collaborative learning environment; design and implementation of extracurricular activities; direct participation in the organization and conduct of experimental work; systematization and generalization of its results and formulation of conclusions, design of the dissertation text.

**The following provisions are submitted for protection:**

1. With the uniqueness of the process of forming flexible competencies of primary school students in the context of learning in cooperation lies in the pedagogical provision of positive interaction of primary school students, aimed at developing a complex of metasubject, interdisciplinary, multidimensional (mental processes and intellectual skills), multifunctional (solving problems in various spheres of life) competencies of primary school students in their organized joint educational activities based on a collaborative learning method. Teaching staff potential this one The goal of this method is to effectively develop the ability of younger students to clearly argue, develop their critical thinking, a high level of educational motivation, readiness to build respectful relationships with others, regardless of religious, national and social differences, to form independence and cohesion of the class team by building positive relationships between teachers and students, as well as organizing joint training..

2. With obsessive-procedural model of flexible competencies for younger students in a collaborative learning environment containing the target address, theoretical and methodological approach, the content, process, technological, and performance-evaluation blocks are characterized by a stable correlation of the logic of the propaedeutic, basic, and reflexive-evaluation stages of formation flexible

competencies for primary school students in a collaborative learning environment based on a combination of axiological, epistemological, and praxeological approaches.

3. Pedagogical conditions of formation flexible competencies for younger students in the collaborative learning environments include: using the ideas of humanistic and reformist pedagogy in the course of formation of the state educational system. flexible competencies primary school students; implementation of programsy The aim of the project is to develop methodological recommendations for teachers on optimizing the process of developing flexible competencies of primary school students in a collaborative learning environment.

**Testing and implementation of research results** they were carried out at methodological seminars, meetings of departments Institute of Psychology and Education of Kazan Federal University, as well as at scientific and practical conferences of various levels:

- *international*: VII and VIII International Forum on Teacher Education IFTE (2021, 2022) of Kazan Federal University; II International Conference "Big Data in Education "(2021) of Moscow City Pedagogical University; V International Scientific and Practical Conference " Modern Problems of Philology and methods of teaching languages: questions and theories of practice "(2021); II International Scientific and Practical Conference "Simonov Winter Readings" (2019), etc.;

- *all-Russian*: V and VII All-Russian scientific and practical conference with international participation "Readings after Andreev"(2020, 2022) of Kazan Federal University; I All-Russian Scientific and Practical Conference " Language, Society and Information Technologies"(2022), etc.;

- *regional level*: I Republican Scientific and Practical Conference "Multilingual Education and Intercultural Communication in the XXI Century "(2021).

The results of the study are presented in 13 publications of the author, including: 3 articles recommended by the Higher Attestation Commission of the Russian Federation, 1 article in a publication indexed by the database "SCOPUS" and 1 training manual.

**Work structure.** The dissertation consists of an introduction, two chapters, a conclusion, a bibliographic list (258 titles), and 8 appendices. The text of the dissertation (the main text is 183 pages long) contains 9 figures and 17 tables.

## 2. MAIN CONTENT OF THE DISSERTATION

**In the introduction** the relevance, problem, purpose, object, subject, hypothesis, tasks and methods of research, as well as its scientific novelty, theoretical and practical significance are presented, the content of the work stages is considered, and the main provisions submitted for defense are developed.

**In the first chapter, "Theoretical foundations developing flexible competencies for younger students"** the essence of flexible competencies is defined, domestic and constructive foreign experience is analyzed formations flexible competencies for younger students, the pedagogical potencial is presented collaborative learning methods in the formation process flexible competencies in primary school students, as well as the pedagogical conditions of the studied process are developed.

Analysis of Russian psychological, pedagogical and methodological literature on the problem formations flexible competencies It allows us to conclude that flexible

competencies can be considered as: metasubject, interdisciplinary, multidimensional (mental processes and intellectual skills), multifunctional (problem solving in various spheres of life) competencies that are formed in primary school students in educational activities, within the framework of the Federal State Educational Standard of Higher Professional Education; effective activity in the educational process of primary school students in educational, social and labor; cultural and leisure spheres; a way of self-realization and self-development, active social and civic position and inclusion; personal qualities that ensure the ability to assert oneself in society and interact with the surrounding reality; the problem of forming flexible competencies has become relevant again in the last decade and continues to be studied by many scientists, finding its reflection in research works; the principle of forming a person as a person dictates constant development and creative self-development.

To Constructive foreign experience in developing flexible competencies in primary school students in the study is represented by educational practices in such countries as Canada, Finland, the United States of America, South Korea, China and Germany. The analysis of the experience of the countries under consideration in the context of domestic educational practices allows us to identify the following general and special features of the process under study. So, native scientists pay attention on the content characteristics of flexible competencies (self-development, leadership skills, teamwork, communication skills). Foreign researchers share the position of their domestic colleagues, considering flexible competencies as an integral part of their work. soft skills based on the personal qualities of a person and manifested in interaction with people. A significant difference in the formation of flexible competencies in primary school students is that Western scientists, unlike Russian ones, implement a specific set of flexible competencies within academic subjects, choosing the principle of group work. At the same time, Russian authors believe that the process of forming flexible competencies occurs most successfully in the framework of interdisciplinary training.

As national features of the formation of flexible competencies in primary school students were identified: facilitation (Russia); development of environmental thinking and financial literacy of students using innovative forms and methods of work (Canada); use of game, experimental and other active forms of cognitive activity (Finland); organization of group projects, work with media resources (US\$); career guidance, club activities, family support (South Korea) ; professional support for teachers and non-formal learning (China); taking advantage of opportunities interdisciplinary and project-based learning, reliance on active and interactive teaching methods, effective forms of cooperation with students ' parents (Germany).

Based on this analysis, was found that the set of flexible competencies and the methods of their formation have features of differences, however, skills remain common for all the countries under consideration positive interaction between primary school students, their digital skills and critical thinking skills. All the countries considered focus primary education on a practice-oriented approach to solving complex social, economic, environmental and ethical issues through joint creative problem solving. A special role is assigned to the personality of a teacher who is ready to innovate and is able to update the content of the educational process, as well as to continuous self-development and self-

improvement. It is important that in the process of developing flexible competencies, teachers teach younger students to trust themselves and their own views, but at the same time be open to new solutions.

In the context of our research, the process of developing flexible competencies of primary school students is carried out in a collaborative learning environment. This method provides an effective formation of the ability of younger students to clearly argue, promotes the development of their critical thinking, readiness to build respectful relationships with others, regardless of religious, national and social differences, and the formation of independence and cohesion of the class team. With this form of organization of the educational process, students of primary school age are more motivated to learn, and team skills are formed. values, self-reliance develops. At the same time, the role of the teacher should not consist in transmitting knowledge and experience to students, but in organizing their independent creative activities. That is why the method of learning in collaboration is most interesting in a modern school environment.

The content of the process of forming flexible competencies of primary school students in the context of learning in collaboration in the study is represented by the following components: cognitive (knowledge about the practical value of flexible competencies and their impact on success in life), functional (a set of personal skills, practical experience in identifying problem areas and building ways to solve them), psychological (motives, needs, goals and readiness of a primary school student for various types of activities) and social (the ability and readiness of a primary school student to interact positively with other people, performing various social roles in the group and team).

**In the second chapter, " Experimental study of the formation process flexible competencies for younger students"** submitted by a model of formation of flexible competences of primary school students educational conditions that contribute to improving the effectiveness of this process and the results of experimental work on their approbation.

Suggested in the study content and process information system formation model flexible competencies for younger students in a collaborative learning environment it includes six blocks: targeted, theoretical and methodological, and informative, technological, procedural level and performance-based evaluation (Fig. 1).

In *the target block* the proposed model traces the significant characteristics of the studied pedagogical object. The main goal of our research is to form a model for the following tasks: flexible competencies for younger students in a collaborative learning environment. To achieve this goal, the model defines the following tasks: development of social and personal significance in primary school children flexible competencies\* formation of a positive attitude towards forms of learning in cooperation among younger students.

Next *theoretical and methodological block* offered by models are revealed by interrelated principles (cognitive, logical, informational) and approaches (axiological, epistemological, praxeological). flexible competencies for younger students in a collaborative learning environment.

*Content block* program manager ough extracurricular activities related to the formation of flexible competencies for younger students in a collaborative learning

environment (4 composite blocks: «What you need to know about flexible competencies?», «What should I do with flexible competencies?», «Who and what can help you develop flexible competencies?», «How do flexible competencies help you collaborate with people?»), as well as presented with technological maps of extracurricular activities and scenarios of events for the formation flexible competencies for younger students in a collaborative learning environment.

*Technological block* contains forms (informational-receptive, interactive, individual and group consultations, group forms of work, etc.), methods of teaching and upbringing (test methods: "Level of cooperation test" by D.B. Elkonin, "Test to identify readiness for learning in interactive mode" by E.V. Korotaeva; questionnaire for identifying the most important meta-subject results, collaborative learning method), as well as funds (computer presentations, Internet resources, mobile devices (smartphone, tablet), animated series ("Kaleidoscope of Professions", videos "Jumble"), which contribute to the activation of joint activities of teachers and primary school students in the process under consideration.

*Process block* It is represented by pedagogical conditions of formation flexible competencies primary school students in the context of learning in cooperation (using the ideas of humanistic and reformist pedagogy; implementation of programs).y development of methodological recommendations for teachers on optimizing the process of developing flexible competencies of primary school students in a collaborative learning environment) in order to increase the effectiveness of the process being studied, as well as a description of factors (taking into account the age and individual characteristics of primary school children; taking an active position of the primary school student; focusing on the democratic style of communication; a differentiated approach to the formation of flexible competencies in primary school students, taking into account their needs. development of a positive attitude of primary school students to the process of forming their flexible competencies) and stages (propaedeutic; basic; reflexive-evaluative) formations flexible competencies for younger students.

*Performance and evaluation block* the model contains criteria for the formation of flexible competencies of primary school students in a collaborative learning environment and their indicators (*motivational-targeted approach*: the presence of motivation to work in a group, the ability to set and realize the goal, the presence of a motive for achieving the goal based on individual personal characteristics; *content and meaning analysis*: awareness of the essence of flexible competencies, the content of flexible competencies and the attitude of a primary school student to the content of classes on the formation of flexible competencies; *estimated*: attitude to working in a group, independence, as well as the degree of self-realization in working in a group; *organizational chart*: ability to self-organize, the way of interaction in a group, as well as the attitude of a primary school student to the requirements for working in a group; *reflexive and predictive analysis*: reflection of one's own behavior, the nature of attribution of responsibility, foreseeing and predicting the personal and socially significant consequences of one's actions; *operational-activity approach*: mastering of skills and abilities of working in a group by younger schoolchildren, further use of skills and tactics of working in a group by younger schoolchildren, striving to improve the skills of using tools and methods of working in a group), as well as the levels (high, medium, low) of the studied process, taking into account the psychological and pedagogical characteristics of younger schoolchildren. Their practical application makes it possible to diagnose the initial level of formation of flexible competencies in younger



schoolchildren, thanks to which, in the future, actions will be taken aimed at correcting or maintaining the identified level of formation of flexible competencies in younger schoolchildren.

Withholding and procedural information the model of forming flexible competencies of primary school students in the context of learning in cooperation was tested from 2019 to 2023 on the basis of MAOU "Lyceum-Engineering Center" of Sovetsky district of Kazan and MBOU "Tatar-English gymnasium No. 16" of Privolzhsky district of Kazan. 120 students of grades 1-4 took part in the experiment: the experimental group (EG) – 60 students (two classes), the control group (CG) – 60 students (two classes).

*At the ascertaining stage* During the experiment, the cognitive, functional, psychological and social components of the formation of flexible competencies of primary school students in a collaborative learning environment were diagnosed. At this stage, the following diagnostic tools were used: an author's questionnaire (for teachers and primary school students), a questionnaire for identifying the most important meta-subject results for students (O.N. Krylova, E.G. Boitsova), a test to identify readiness for learning in interactive mode (E.V. Korotaeva), test to determine the level of cooperation of primary school students (D.B. Elkonin).

The results of the ascertaining stage of the experiment revealed the insufficient level of formation of flexible competencies of primary school students in the context of learning in cooperation, which prompted us to develop additional measures that contribute to the effectiveness of this process.

*At the formative stage* the experiment was implemented as proposed and presented above content and process information system model formations flexible competencies for younger students in the context of collaborative learning and pedagogical conditions that contribute to improving the effectiveness of this process.

At this stage, participants of the experimental group were offered various forms and methods of organizing extracurricular educational activities, and a cycle of extracurricular activities was conducted, which are reflected in the pedagogical conditions offered by us, which ensure the effective use of formation of primary school students flexible competencies in a collaborative learning environment.

*First condition* - use of the ideas of humanistic and reformist foreign pedagogy in the course of formation of the Russian language. flexible competencies This is reflected in the content block of our model, namely, in the selection and structuring of the content of the extracurricular activities program for younger students. The educational practices of the foreign countries under consideration allow us to place special emphasis on developing the abilities of primary school children to independently search for and use information, as well as to jointly solve problems, build arguments, reasoning, conclusions and inventions. In addition, students of primary school age are constantly in the The task of the teacher is to develop the skills of younger students to see alternatives, to analyze and combine opinions in an unbiased way, and to think outside the box. To achieve these goals, we implemented a comprehensive integration of a set of forms of play and motor activity, the use of experimental and other active approaches, as well as various forms of art that promote a positive perception of the learning process in cooperation among younger students and stimulate their ability to think creatively.

*Second condition* - implementation of programsy extracurricular activities for primary school students aimed at developing their flexible competencies in the context of learning in cooperation, were held in the 3rd grade of primary school and was designed for 34 hours (at the rate of 1 hour per week). The proposed program included 4 consecutive blocks. Goal learning the first blockbut «What you need to know about flexible competencies?» was the development of the ability about primary school age students to critical thinking, making sense of it such as features of flexible competencies using their content to achieve their own goals, develop knowledge and opportunities for active participation in society.

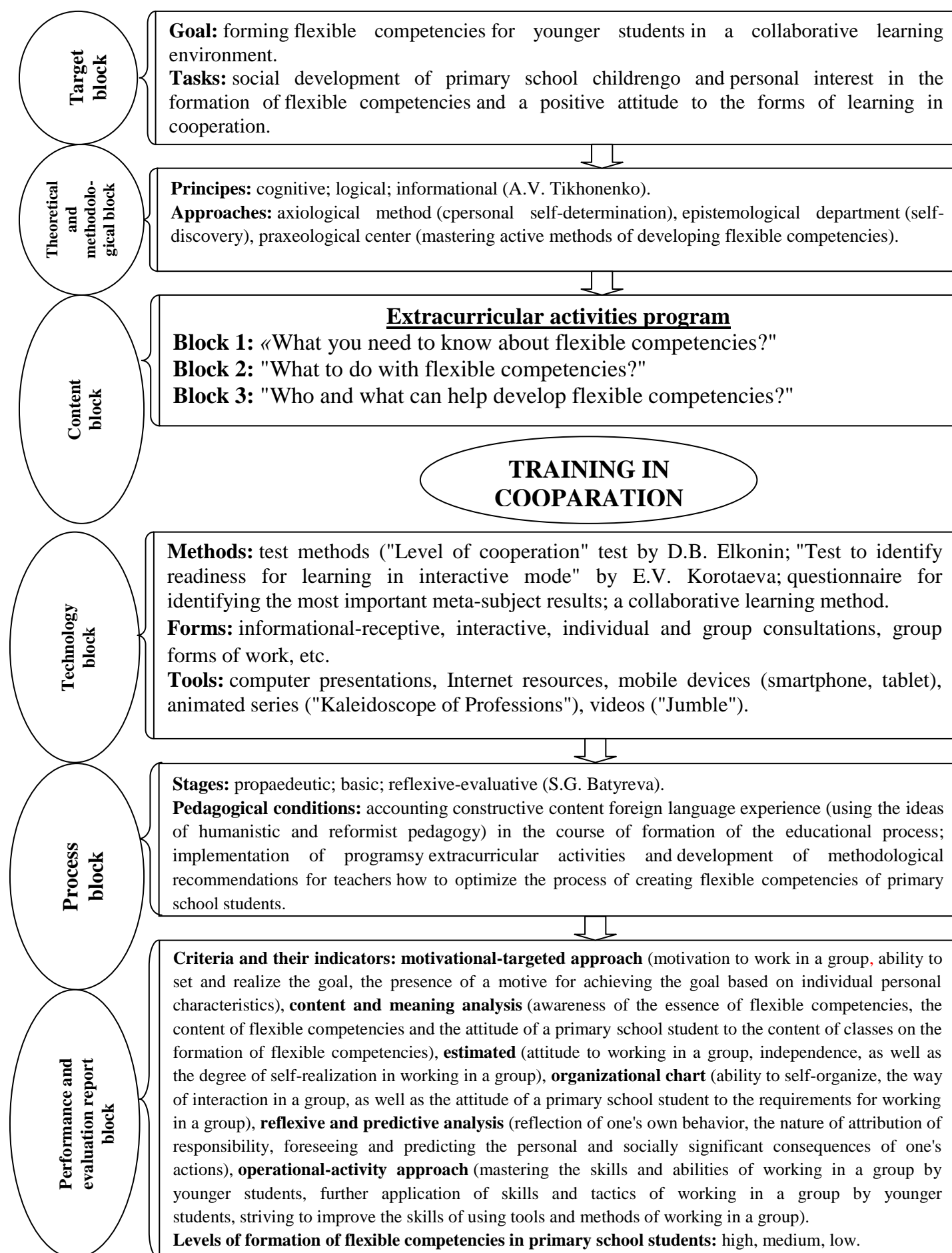


Figure 1. The model for developing flexible competencies in primary school students in the following areas: collaborative learning environment



Second block of the program "What should I do with flexible competencies?» It is aimed at developing students ' creative abilities in the framework of project, competitive, training and intellectual and creative forms of activity for the implementation of the creative principle in younger schoolchildren. Goal of the third block «Who and what can help you develop flexible competencies?» The main goal of the study was the development of communication skills in primary school students, the formation of cognitive interest in the field of self-knowledge and the motivational and value component. Fourth block "How do flexible competencies help you collaborate with people?» It is aimed at developing the ability of primary school students to cooperate, as well as obtaining and applying practical skills of interaction in heterogeneous and homogeneous groups.

*Third condition* – the development of methodological recommendations for teachers on optimizing the process of developing flexible competencies of primary school students in a collaborative learning environment was caused by the fact that according to the responses of teachers, unfortunately, not all of them showed theoretical and methodological readiness for this process, shifting their professional responsibility for the upbringing (independence, responsibility, purposefulness) of primary school children to the family or to other social institutions of society (additional educational institutions, the state). The survey data obtained determine the main directions of teacher's educational work in the process of developing flexible competencies in primary school students in a collaborative learning environment, these include: organizing meetings with successful people; excursions to enterprises and organizations; providing individual support for younger students; conducting trainings aimed at developing the personal qualities of younger students; working on career guidance. Teachers should pay special attention to the involvement of various social institutions in the process of developing flexible competencies in younger students (successful people, families, government organizations and enterprises).

In the current conditions of socio-economic instability and political turbulence, the role of teachers is primarily to create such psychological and pedagogical conditions that could help the younger generation to form an individual route for the development of flexible competencies, both for self-realization and for social significance.

*At the control stage* We compared the results of the ascertaining and forming stages of the experiment.

For analyzing the cognitive component, consisting of a complex of knowledge about the practical value of flexible competencies and The results of the author's questionnaire presented in Table 1 were used to determine their impact on success in life.

Table 1

**Levels of formation of the cognitive component of flexible competencies in primary school children in CG and EG (author's questionnaire) at the ascertaining and control stages of the experiment**

| Stages of the experiment | High level |      |           |       | Average level |       |           |     | Low level |    |           |        |
|--------------------------|------------|------|-----------|-------|---------------|-------|-----------|-----|-----------|----|-----------|--------|
|                          | KG         |      | EG        |       | KG            |       | EG        |     | KG        |    | EG        |        |
|                          | Abs. num.  | %    | Abs. num. | %     | Abs. num.     | %     | Abs. num. | %   | Абс. чис. | %  | Абс. чис. | %      |
| Ascertaining stage       | 4          | 6,67 | 2         | 3,33  | 17            | 28,33 | 18        | 30  | 39        | 65 | 40        | 66,67  |
| Control stage            | 4          | 6,67 | 7         | 11,67 | 20            | 33,33 | 24        | 40  | 36        | 60 | 29        | 48,33  |
| Dynamics changes         | 0          | 0    | +9        | +8,34 | +3            | +5    | +6        | +10 | -3        | -5 | -11       | -18,34 |

Repeated diagnostics of the levels of formation of flexible competencies of primary school students in the EG, conducted at the control stage of the pedagogical experiment, determined a positive trend: 11.67% of students young people a high level of formation of the cognitive component of flexible competencies was revealed; the average level was 40% of the surveyed primary school students; the low level was 48.33% of the experiment participants.

Functional component, disclosure document a set of personal skills, practical experience in identifying problem areas and building ways to solve them, was presented based on the analysis of the questionnaire data to identify the most important meta-subject results for students, proposed by O.N. Krylova and E.G. Boitsova.

The correlation analysis revealed the interrelation of some communicative universal learning activities with each other in EG. A statistically significant relationship was found between "teamwork" and "asking questions" ( $r=0.63$ ), "correct use of speech" ( $r=0.83$ ), "formulating one's own position" ( $r=0.53$ ), and "providing support to those on whom goal achievement depends" ( $r=0.68$ ). Such an indicator as correct use of speech ( $r=0.83$ ) correlates with asking questions ( $r=0.83$ ). This may mean that younger students have learned how to ask questions correctly, using various speech techniques and techniques. Cross-over indicator ( $r=0.78$ ) helping those on whom goal achievement depends also has a direct relationship with the ability to correctly formulate and ask questions. In other words, the formed communication skill allows you to build mutually beneficial relationships with people.

A test was used to analyze the psychological component of flexible competencies E. V. Korotaeva, the data of which is presented in the table 2.

Table 2

**Distribution of primary school students by the levels of formation of the psychological component of flexible competencies in EG and CG (in%) (according to the test by E.V. Korotaeva, aimed at identifying readiness for interactive learning")**

| Levels  | Experimental group |                  |                    | Control group   |                  |                    |
|---------|--------------------|------------------|--------------------|-----------------|------------------|--------------------|
|         | I cross-section    | II cross-section | Dynamics of change | I cross-section | II cross-section | Dynamics of change |
| Low     | 8,33               | 0                | -8,33              | 5               | 5                | 0                  |
| Reduced | 15                 | 0                | -15                | 6,67            | 20               | +13,33             |
| Average | 71,67              | 80               | +8,33              | 80              | 70               | -10                |
| High    | 5                  | 20               | +15                | 8,33            | 5                | -3,33              |

The results obtained in EG show positive dynamics at the average (+8.33%) and high (+15%) levels, while in CG negative dynamics was revealed at these levels (-10%; -3.33%). If at low (-8.33%) and reduced (-15%) levels of formation of flexible competencies in the EG there was a decline, then in the CG there was stagnation at a low level and growth at a reduced level (+13.33%).

The revealed dependence confirms the effective work of the formative stage of the experiment, implemented for EG participants.

To check the levels formed areas At the control stage, the D. B. Elkonin test was used to determine the levels of cooperation of younger schoolchildren in the social component of flexible competencies.

According to the data obtained, the maximum gain in KG is in the range of 1.66-3.34%. For EG, the most characteristic differences are changes of 1.66-15%. With regard to the assessment of creativity of the class teacher, the "average" level was higher by 11.67%, and at the "high level" – by 15%. The value of the individual also increased in terms of indicators: "average level" increased by 6.66%, "low level" decreased by 15%, that is, there was a positive trend. Improvements were also noted in such indicators as: class value, creativity value, reflection value, class teacher's reflection score. However, there was a slight decline at the "high level" (1.66-1.67%) during the diagnosis of the value of school and frankness, this may be due to a slight shift in value orientations during the formative stage of the experiment.

The positive dynamics of EG is associated with the fact that the complex of activities of the program of the formative stage of the experiment for the development of the selected value components was selected in order to increase the personal values of younger schoolchildren.

For the purpose of reliable changes in indicators in the levels of formation of the social component of flexible competencies in EG, the G-criterion of signs was applied.

Let's visually trace the final changes in the levels of formation of flexible competencies of primary school students in the conditions of training in cooperation in experimental and control groups (Figure 2).

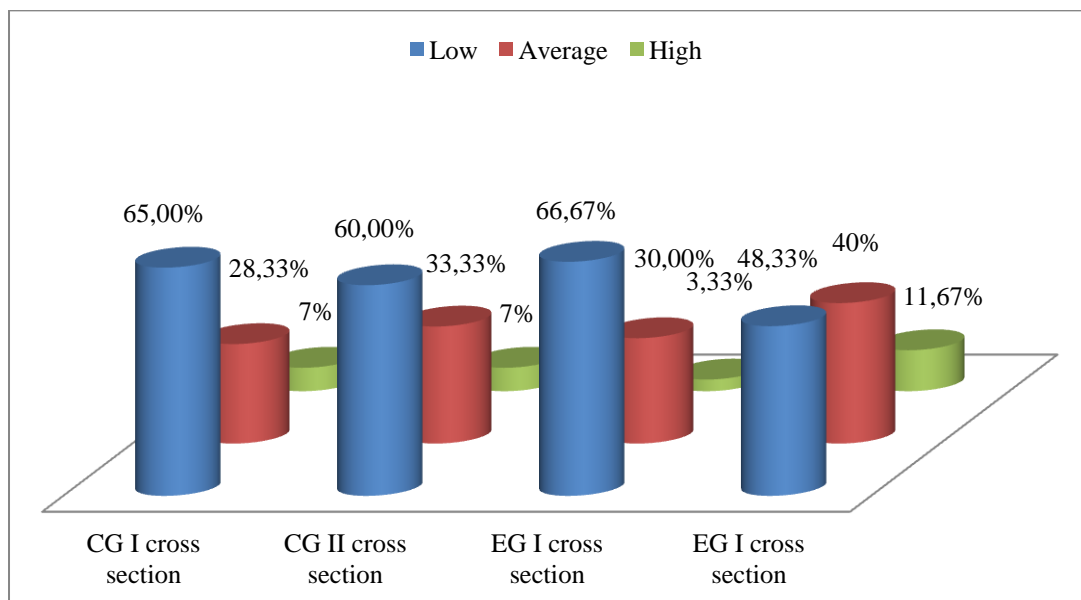


Figure 2. Results of the final diagnostics of the levels of formation of flexible competencies in primary school students in the context of learning in collaboration

Based on the obtained histogram data, it can be determined that a high level of formation of flexible competencies in the experimental group was detected in 11.67% of younger schoolchildren, which is 8.34% more than at the ascertaining stage of the pedagogical experiment. Indicators of the average level of formation of flexible competencies in younger schoolchildren decreased by 10% due to the transition of indicators to the group of high levels of development of flexible competencies.

A comparative analysis of the results of CG and EG was carried out according to all the declared diagnostic methods. The data of mathematical statistics give grounds to speak about significant differences in all indicators.

The difference in the levels of formation of flexible competencies in younger students can be explained by the fact that the younger students of the experimental group took an active part in the experimental work, which was aimed at increasing the levels of formation of their flexible competencies in a collaborative learning environment. In this regard, the level of formation of flexible competencies in younger schoolchildren is higher in the experimental group than in the control group, which participated only at the ascertaining stage of the pedagogical experiment.

Thus, it can be concluded that the organization of experimental work, which included the implementation of the content-procedural model and pedagogical conditions, contributed to improving the effectiveness of the process of forming flexible competencies in younger schoolchildren in a collaborative learning environment.

The results of the study confirmed the proposed hypothesis and allowed us to formulate the following **conclusions**:

1. Modern society places high demands on primary school graduates, which are expressed in the possession of a set of theoretical knowledge, practical skills and such personal qualities as: sociability, critical thinking, creativity, teamwork. For successful self-realization of younger students, there is a need to develop flexible competencies. Effective formation of these competencies is possible thanks to the use of the method of learning in collaboration, which ensures the effective formation of the ability of younger students to clearly argue, develop their critical thinking, a high level of

educational motivation, readiness to build respectful relationships with others regardless of religious, national and social differences, the formation of independence and cohesion of the class team.

2. Developed, theoretically justified and implemented content and process information system model of formation of flexible competencies in primary school students in a collaborative learning environment containing six main blocks: *target* (goal, tasks), *theoretical and methodological approach* (approaches and principles of developing flexible competencies in primary school students), *informative* (programs but formations flexible competencies for younger students in a collaborative learning environment; technological maps of classes and scenarios of events for the formation of the educational process. flexible competencies for younger students), *procedural level* (stages of work and pedagogical conditions for the formation of flexible competencies in primary school students), *technological* (methods, tools, methods and forms), *performance and evaluation report* (criteria and their indicators) blocks. Factors of successful implementation are proposed content-based and procedural information models of developing flexible competencies in primary school students in a collaborative learning environment: taking into account the age characteristics of younger students; taking an active position of the younger student; focusing on the democratic style of communication; differentiated approach to the formation of flexible competencies in primary school students, taking into account their individual needs and characteristics etc.

3. The content of the process of forming flexible competencies of primary school students in the context of learning in collaboration in the study is represented by the following components: cognitive (knowledge about the practical value of flexible competencies and their influence on success in life), functional (a set of personal skills and abilities, practical experience in identifying problem areas and building ways to solve them), psychological (motives, needs, goals and readiness of a primary school student for various activities) and social (ability and readiness to positively interact with other people, perform various tasks) roles in the group and team).

4. Pedagogical conditions that contribute to the effective formation of flexible competencies of primary school students in the context of learning in cooperation are identified and justified, including: the use of the ideas of humanistic and reformist pedagogy in the formation of professional skills of young people. flexible competencies for primary school students in a collaborative learning environment; implementation of programsy extracurricular activities and development of methodological recommendations for teachers to optimize this process.

5. A program of extracurricular activities for primary school students has been developed and tested, aimed at developing their flexible competencies in a collaborative learning environment, including: 4 consecutive blocks: first block "What you need to know about flexible competencies?", second - "What should I do with flexible competencies?", third - "Who and what can help you develop flexible competencies?" and the final - "How do flexible competencies help you collaborate with people?».

6. Defined criteria and indicators cgenerated bynew features flexible competencies for younger students in a collaborative learning environment: *motivational-targeted approach* (the presence of motivation to work in a group, the ability to set and



realize the goal, the presence of a motive for achieving the goal based on individual personal characteristics); *content and meaning analysis* (awareness of the essence of flexible competencies, the content content of flexible competencies and the attitude of the younger student to the content of classes on the formation of flexible competencies); *estimated* (attitude to working in a group, independence, as well as the degree of self-realization in working in a group); *organizational chart* (ability to self-organize, interact in a group, as well as the attitude of a primary school student to the requirements for working in a group); *reflexive and predictive analysis* (reflection of one's own behavior, the nature of attribution of responsibility, foreseeing and predicting the personal and socially significant consequences of one's actions); *operational-activity approach* (mastering the skills and abilities of working in a group by younger students, further application of skills and tactics of working in a group by younger students, striving to improve the skills of using tools and methods of working in a group).

7. The effectiveness of the content-procedural model and pedagogical conditions for the formation of flexible competencies of primary school students in the context of learning in cooperation has been experimentally confirmed.

The main content and results of the study are reflected in the following sections: **publications** by the author:

**Articles in peer-reviewed scientific publications recommended by the Higher Attestation Commission of the Ministry of Science and Technology of the Russian Federation. higher education level educational institutions of the Russian Federation**

1. Ilaeva R. A. Issledovanie effektivnosti protsessa formirovaniya gibkikh kompetentsii mladshikh shkolnikov [Research of the effectiveness of the process of forming flexible competencies of junior schoolchildren]. *Kazansky pedagogicheskiy zhurnal*, 2022. – №5 (154). – P. 147-154.

2. Ilaeva R. A. Diagnostics levels with generated by new features flexible competencies in primary school students / R. A. Ilaeva // *Scientific and methodical electronic resource Concept magazine*. – 2022. – №11 (November). – URL: <http://e-koncept.ru/2022/221080.htm>.

3. Ilaeva R. A. Pedagogical conditions formation of flexible competencies of primary school students based on the method training in cooperation / R. A. Ilaeva // *Pedagogy. Questions of theory and practice*. – 2023. – No. 1. - Volume 8. – №1. – P. 28-36.

**Articles in publications included in databases Scopus and Web of Science**

4. Galimova E.G. A review of research on pedagogical content knowledge in science and mathematics education in the last five years / E.G. Galimova, M.A. Zakharishcheva, E.N. Kolomoets, A.A. Chistyakov, A.I. Prokopyev, A.V. Beloborodova, R.A. Ilaeva // *Eurasia Journal of Mathematics, Science and Technology Education*. – 2023. – №19 (2), em2223. – PP. 1-6. – ISSN:1305-8223 (online) [Doi: 10.29333/ejmste/12837](https://doi.org/10.29333/ejmste/12837)

### **Training manual**

5. Ilaeva R. A., Masalimova A. R. Effective pedagogical practices for developing flexible competencies of primary school students in cooperation. – Kazan: "Print-Service-XXI century", 2022. – 67 p.

### **Publications in scientific publications**

6. Ilaeva R. A. The role of mobile technologies in the formation of key competencies soft skills for younger students // Materials I All-Russian scientific and Practical conference "Language, Society and Information Technologies" (19.02.2022). – Kazan, 2022 – pp. 83-85.

7. Ilaeva R. A. Formation of key competencies soft skills for younger students in a digital educational environment // Actual problems of science: students' view: materials of the All-Russian Student scientific Conference, 2022. Part 2. – pp. 292-294.

8. Ilaeva R. A. Training in cooperation in foreign language lessons as a factor of creative self-development of junior schoolchildren // VII St. Andrew's Readings: modern concepts and technologies of creative self-development of the individual: a collection of articles by participants of the All-Russian Scientific and Practical Conference with international participation (Kazan, March 24-25, 2022). - Kazan: Kazan University Press, 2022. – P. 161-166.

9. Ilaeva R. A. Obuchenie v sotrudnichestvo kak metod organizatsii vneshnourochnoy deyatel'nosti po angliyskomu yazyku u mladshikh shkolnikov [Training in cooperation as a method of organizing extracurricular activities in English for younger schoolchildren] «Modern problems of philology and methods of teaching languages: questions and theories of practice». Elabuga Publ., 2021, pp. 94-97.

10. Ilaeva R. A. Modeling of the process of formation of key competencies soft skills in primary school children in learning environments in collaboration Collection at the end of the II International conference «Big data in education», August 25-27, 2021 / Ed. by S. N. Vachkova. - M.: Izvo «Ekon-Inform» 2021, pp. 62-71.

11. Ilaeva R. A. Digitalization of education: modern technologies of distance learning]. Informatsionno-kommunikatsionnye tekhnologii v pedagogicheskom obrazovanii [Information and communication technologies in pedagogical education]. – 2021. – №3 (72). – Pp. 103-109.

12. Ilaeva R. A. Psikhologo-pedagogicheskie usloviya povysheniya effektivnosti protsessa formirovaniya klyuchevykh kompetentsii (soft skills) u mladshikh shkolnikov [Psychological and pedagogical conditions for improving the effectiveness of the process of forming key competencies (soft skills) in younger schoolchildren]: proceedings of the All-Russian scientific and practical conference with remote and international participation: December 21-22, 2020-Ulyanovsk: ZEBRA, 2020. - pp. 256-259.

13. Ilaeva R. A. Constructive experience of formation soft skills for younger students in Germany (for example IBB Ganztagsgrundschule) // V Andreevskie chteniya: sovremennye kontseptsii i tekhnologii tvorcheskogo samorazvitiya lichnosti [St. Andrew's Readings: modern concepts and technologies of creative self-development of the individual]. conf. with int. with participation. – Kazan: Center for Innovative Technologies, 2020, pp. 186-191.