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STEP-BY-STEP INTEGRATED LEARNING AS A FACTOR OF INTELLECTUAL DEVELOPMENT OF ELEMENTARY SCHOOL STUDENTS

Annotation. *The present article reveals the problems of integrated learning, which in modern conditions is considered one of the important facts of intellectual development of elementary school students. The research is carried out to establish the influence of stage-by-stage complex approach on intellectual development in elementary school students. The main ideas are defined as follows: existing concepts and models of stage-by-stage complex intellectual development of junior schoolchildren require their development; the study of peculiarities and possibilities of realization of stage-by-stage complex teaching in elementary school will allow to develop recommendations on introduction of innovative pedagogical technologies (model) of stage-by-stage complex teaching aimed at increasing the level of intellectual achievements of students; it is important to experimentally confirm the effectiveness of the proposed recommendations. The study has been carried out. A new model of stage-by-stage teaching is proposed to ensure continuity between the stages of education and equal intellectual development.*

A unique method of diagnostics of intellectual development has been developed, which allows to objectively evaluate the effectiveness of educational technologies. Practical significance of the recommendations on creating conditions for the intellectual development of elementary school children, aimed at teachers and administrators of elementary school.

Keywords: *phased integrated learning, intellectual development, elementary school, schoolchildrens, model.*

Introduction

The relevance of the topic under study is determined by the need to improve the quality of intellectual development of elementary school students through the activities of stage-by-stage integrated learning. This is due to the fact that modern education in its development requires the development of new approaches and methods that contribute to the formation of the following stage-by-stage complex in junior schoolchildren: the development of cognitive activity; the development of creative abilities and critical thinking and other educational skills. Despite the significant interest of teachers and psychologists to the issues of organizing the learning process, the problem of the effective impact of

stage-by-stage complex educational technologies on intellectual development remains insufficiently studied and requires further theoretical and methodological understanding.

The purpose of the study is to identify the impact of a step-by-step integrated approach on intellectual development in elementary school students.

The following objectives were formulated in order to achieve the set goal:

1. To analyze the existing concepts and models of stage-by-stage complex intellectual development of junior schoolchildren.

2. To study the peculiarities and possibilities of realization of stage-by-stage integrated learning in elementary school.

3. To develop recommendations for the implementation of innovative pedagogical technologies (model) of step-by-step integrated learning aimed at increasing the level of intellectual achievement of students.

4. Experimentally test the effectiveness of the proposed recommendations.

The scientific novelty of the study consists in the development of a model of step-by-step integrated learning that provides systematic formation of intellectual competence of elementary school students.

The object of the study is the intellectual development of elementary school students.

The subject of the study is the processes of step-by-step integrated learning used to develop the intelligence of junior high school students.

Despite significant successes in studying the problems of intellectual development of junior schoolchildren, there are serious contradictions and unresolved issues concerning the stages of formation and improvement of methods of teaching intellectual development in junior school. The conflicts in theory and methodology should be called the lack of a unified classification of intellectual development models, as each school offers its own, which makes it difficult to generalize the accumulated knowledge and experience. They also include rather contradictory opinions about the criteria of successful intellectual growth in elementary school: insufficient consistency of the conceptual apparatus; some authors emphasize the development of memory and attention, while others emphasize the importance of creative thinking and the ability to solve non-standard tasks. All this complicates the comparability of research results and available experience.

The following problems of practice should be identified: difficulties in adapting existing teaching methods to the conditions of the modern school program and increased load on elementary school students; insufficiently effective diagnostics of intellectual development levels of schoolchildren, as the tests used at school are usually limited to the assessment of individual indicators of intellectual development, which does not give the opportunity to cover the competencies necessary for primary school age: low level of teachers' training for the use of modern pedagogies

In the preparation of the study, the works of authors reviewing and describing theories and practices in the field of pedagogy and psychology of education on this topic were used, such as S. Kong [1], K. Bozgün [2], S. Zhang [3], E. A. Tsiloni [4], A. Uka [5], M.A. Kholodnaya [6], Y. Wang [7], N. Ahmadi [8] and others, as well as modern publications of Kazakhstani authors, devoted to the problems of elementary education and intellectual development of the child in the younger school age: G. Sakhipova [9], J.E. Sarsekeeva [10], G.A. Kasen [11], A.K. Ersarina, G.K. Kudaibergenova, T.N. Almazova [12], O.B. Samieva [13], R.O. Kenzhetaeva, S.A. Nurzhanova [14], T.O. Karataeva, E. Abilda [15], A.E. Sagymbaeva [16] and others.

The initial hypothesis assumes the possibility of significant improvement in the intellectual performance of elementary school pupils, provided that they will be trained according to a specially designed system of complex step-by-step teaching and educational activities.

Prospects for the development of the research topic are defined as: conducting further study of the mechanisms of step-by-step integrated learning based on the relationship between the intellectual and personal development of students, including the emotional sphere and motivation; developing measures that combine traditional learning with innovative elements; creating standardized tools for the development and assessment of the intellectual potential of younger schoolchildren, allowing to take into account individual differences; formulating recommendations to improve the professional and personal development of students, including the emotional sphere and motivation; developing measures that combine traditional learning with innovative elements; creating standardized tools for the development and assessment of the intellectual potential of younger schoolchildren, allowing to take into account individual differences; formulating recommendations for the improvement of the intellectual potential of younger schoolchildren; and formulating recommendations for the improvement of the professional and personal development of students.

Materials and methods

At the first stage the literature analysis aimed at analyzing the existing concept and model of phased complex intellectual development of junior schoolchildren was carried out. The materials of the research were the above-mentioned sources.

Research methods for the study of the second task, to determine the features and opportunities for the implementation of step-by-step integrated learning in elementary school were:

– theoretical analysis of works of domestic and foreign scientists, covering the problems of step-by-step integrated learning, formation of intellectual qualities, psychological and pedagogical diagnostics and monitoring of junior schoolchildren;

– expert interviews and surveys of teachers working in elementary school about the opportunities and difficulties of implementing the integrated learning system, its impact on the development of intellectual abilities of students.

– Observation of the educational process in elementary school and assessment of the quality of technologies used in practice, as well as identification of shortcomings and prospects for improvement.

Scientific articles and monographs of foreign and domestic authors, as well as Model curricula of the Ministry of Education of the Republic of Kazakhstan and Recommendations on the implementation of hours of the variable component, developed by order of the Ministry of Education of the Republic of Kazakhstan, also became the material of the study.

Methodology for conducting surveys of experts and elementary school teachers to assess their opinions on possible ways of implementing a step-by-step integrated teaching system and its impact on the development of intellectual abilities of students. Participants of the research: experts (20 people), educational scientists, psychologists, methodologists; elementary school teachers (20 people) working with pupils of the first-fourth grades for more than five years. Data collection methods: a questionnaire, which included questions about the possibility of implementing a step-by-step integrated teaching system; difficulties in implementing a step-by-step integrated teaching system: the impact of a step-by-step integrated teaching system on the intellectual development of students. A total of eight questions had to be answered.

Methodology for interviewing experts and elementary school teachers, for the same purpose as the survey. Experts: representatives of the education sector who have specialized education and many years of experience in this area. Teachers: current elementary school teachers who regularly face the implementation of constantly introduced new educational programs, provided they have been working for at least five years. A list of questions was prepared in advance and agreed upon with the participants. The main block of questions: opinion about the integrated learning system: possible benefits and risks; what difficulties arise in the implementation of a phased integrated learning system; suggestions for improving the effectiveness of the primary education system.

Methodology and materials used in the development of the model of gradual complex intellectual development of elementary school students. Based on the works of such scientists as L.S. Vygotsky, D.B. Elkonin, V.V. Davydov, J. Piaget, R.S. Bunyatova, J. Davydov we take into account the peculiarities of children's psyche and the laws of formation of higher mental functions. We used the results of empirical studies conducted earlier in educational institutions of various profiles. The main sources were the data confirming the influence of different pedagogical approaches on the dynamics of intellectual development of children of primary school age (materials of dissertations,

scientific articles and monographs devoted to the problems and various aspects of step-by-step teaching and diagnostics of the effectiveness of the technologies used). As a normative-legal basis the normative-legal acts of the state and departmental level regulating the sphere of education and requirements to the quality of the educational process were used (the State Educational Standards of the Republic of Kazakhstan of primary general education, the Orders of the Ministry of Education and Science of the Republic of Kazakhstan and separate regulations).

Practical testing of the model takes place within the framework of experimental work organized in Muzafar Alimbayev School in Pavlodar. Preliminary diagnostics of students' intellectual development, monitoring of development dynamics at each stage of model implementation and final diagnostics to fix the results are conducted.

Diagnostics are used to diagnose:

– Raven's test («Progressive Matrices») to measure the level of intellectual development.

– Diagnostics of educational achievements in individual disciplines (Russian language, mathematics, reading).

Observations on the level of initiative, cognitive activity and communication skills.

Two groups of 4th grade students took part in the study: the control group (32 students) and the experimental group (30 students). Monitoring of the development dynamics was conducted at each stage of the model implementation: after each block of activities interim measurements of the level of intellectual development and academic achievements were made. In addition, changes in the behavior and interaction of students were monitored. The final diagnostics was carried out after the completion of the experiment. The Raven's test and the diagnostics of educational achievements were repeated. The results were compared with the preliminary stage to assess the dynamics. Assessment of academic achievement in three subjects, then the average is deduced: less than 60% – unsatisfactory level of standard fulfillment; 60-75% – satisfactory level; 75-90% – good level; 90-100% – excellent. The methodology of calculation of indicators («Initiative», «Cognitive activity», «Communicativeness») are based on subjective assessments of teachers and are presented in the form of arithmetic mean values and standard deviation, according to the 5-ball system. The standard deviation (±) shows the scatter of values relative to the average score (the smaller the deviation, the closer the results are to the average value).

The working materials were: a program (model) of gradual complex intellectual development, containing descriptions of stages, expected results and recommended pedagogical methods; methodological recommendations for teachers, containing instructions for conducting lessons and sample scripts of lessons; information and reference materials for parents, explaining the goals and objectives of the program, as well as ways to support the child at home.

Statistical analysis of the obtained data, allowing to identify patterns and confirm hypotheses about the influence of the complex of measures on the intellectual development of junior schoolchildren.

Results and discussion

When defining the term «stage-by-stage complex intellectual development», its clear concept and authorship are not established. Staged complex intellectual development is a generalized concept, which is formed from several theoretical sources and pedagogical practices. A number of well-known researchers have made significant contributions to the formulation and understanding of this concept. For example, Y. Wang in his concept of age stages of cognitive development of a child, distinguishes sensorimotor, pre-operational, concrete-operational and formal-logical stages [7, p. 900]. S. Zhang, when introducing the zone of proximal development, pointed out necessity of transition from current levels of understanding to future levels through active interaction with the environment and educational activities [3, p. 2610]. E. Tsiloni proposed a model of learning cycle and spiral, emphasizing repetition, comprehension and knowledge expansion, which should be carried out through the stages of observation, reflection, integration and application [4, p. 341]. The obtained data allow us to give the following definition of the stage-by-stage integrated intellectual development of junior schoolchildren: a child's successive passage through certain phases of learning, each of which gradually develops his/her intellectual abilities such as perception, thinking, memory, imagination and creativity. The key characteristics are consistency, systematicity and interconnectedness of all aspects of cognition.

The key concepts and models of stage-by-stage integrated intellectual development of junior schoolchildren have been identified:

1. J. Piaget's model based on concept of stages of child's cognitive development.

2. Vygotsky's theory, through the zone of nearest development, through interaction with adults and peers, which stimulates intellectual activity.

3. D. Kolb and J. Colb's cyclic models of learning: concrete experiments → reflection → abstraction → application.

4. Bruner's spiral learning: repeatedly returning to core ideas at different levels of complexity.

5. The Swiss model Fondation de la Pensée Critique (FPC) focuses on the development of critical thinking in junior high school students through problem solving and discussion forms of work.

6. American Project-Based Models (PBL), which are agentic in developing real-world problem-solving skills, creativity, and autonomy.

7. The Finnish model of «Phenomenon-based learning» based on cross-curricular learning and on the integration of science and practical skills [17; 18].

The results of theoretical analysis of works of domestic and foreign scientists covering the problems of step-by-step integrated learning, formation of intellectual qualities, psychological and pedagogical diagnostics and monitoring of junior schoolchildren. Studies of Kazakhstani scientists confirm the effectiveness of a phased integrated approach to teaching junior schoolchildren. The most significant results are reflected in the works of G.A. Kasen, A.K. Mynbayev, Z.M. Sadvakasova who, considering the methodological potential of the theory of gradual formation of intellectual development as mental actions, based on the activity approach, shows the importance of technology based on the possession of ways of intellectual and creative activity [11, p. 50]. K. Yerzhigitova determines for elementary school the most important innovative methods of teaching, assuming the development of differentiated learning, taking into account the unique intellectual abilities of each child [9, p. 351]. Personality-oriented, project and problem-oriented approaches in complex teaching are noted by T.O. Karataeva, E. Abilda [15, p. 586] and G.A. Kasen, A.K. Mynbaeva, Z.M. Sadvakasova [11, p. 60]

Foreign experts: Some Western researchers (Roger Levin, Carol Dweck) [17, p. 10] and others note the importance of combining traditional teaching methods with elements of step-by-step research activities and application of the project method already in junior school, which allows to provide children with a deeper mastery of the material [18, p. 40]. At the same time, R. Levin emphasizes the importance of practical orientation of learning, believing that passive acquisition of knowledge is ineffective. His approach is aimed at involving children in active activities, encouraging independent search for solutions and setting life tasks, which forms a solid foundation for further intellectual development from elementary school. His theory on the formation of a «growth mindset», promotes a positive perception of children, both mistakes and constant attempts to improve their knowledge. Because a child who perceives mistakes as part of the learning process makes greater strides in intellectual development. The work of these scientists confirms that intellectual development of junior schoolchildren is closely connected with active activity, gradual development based on regular exercises and positive attitude to their mistakes.

Model curricula of the Ministry of Education of the Republic of Kazakhstan [19] contain mandatory elements of educational content, regulating the number of hours for subjects and the goals that the school should achieve. These plans assume the implementation of the principles of step-by-step learning, forming in junior schoolchildren basic knowledge and skills necessary for successful continuation of education. However, the existing curricula require additional filling with methods and technologies that promote full intellectual development, since traditional educational technologies are often insufficiently flexible and poorly adapted to the individual needs of each child.

According to the recommendations approved by the Ministry [20], the hours of the variable component allow including in the program of classes additional modules and

projects aimed at the gradual development of students' creative and intellectual abilities. However, there are no clear mechanisms to confirm the effectiveness of the training modules outlined in these recommendations, which reduces their usefulness

All of these approaches, theories and concepts have become the basis for the development of measures for the step-by-step integrated intellectual development of primary school children

The results of the survey to establish the opinion of experts and elementary school teachers about possible ways of implementing the integrated learning system and its impact on the development of intellectual abilities of elementary school students are reflected in Table 1.

Table 1 – Results of the survey of experts and elementary school teachers, in percentages

Indicators	Experts	Teachers
The realization of a step-by-step integrated training system is possible	75%	60%
Resource requirements for implementation		
– Materials and equipment	90%	85%
– Professional development	85%	75%
Advantages of an integrated system		
– Improved intellectual ability	95%	80%
– Improving learning outcomes	80%	70%
The main difficulties		
– Lack of funding	80%	75%
– Underqualified teachers	60%	55%
Minimizing difficulties		
– Increased funding	90%	85%
– Refresher courses	85%	75%
The effect of a phased integrated system on intellectual development		
– Significant positive effect	80%	65%
– Moderate positive effect	15%	25%
– No effect	5%	10%

The conducted questionnaire survey has shown that experts and teachers agree on the positive aspects of the integrated teaching system and its significant impact on the development of intellectual abilities of junior schoolchildren. At the same time, both groups noted significant difficulties hindering the full realization of this system in general education institutions.

The majority of experts (75%) and a significant proportion of teachers (60%) confirmed positive perceptions of the phased integrated learning system, as such a system is feasible and brings tangible benefits in the development of students' intellectual abilities. Among the benefits, they emphasized the improvement of qualitative characteristics of knowledge, strengthening of motivation to learn, and improvement of overall academic performance.

Almost all participants pointed out the necessary resources for successful implementation of such training: the important role of material base and quality software (experts – 90%, teachers – 85%). I also point out that professional development of teachers is required: noted by the majority of experts (85%) and a significant part of teachers (75%).

The factors hindering the implementation of the integrated system are primarily financial insufficiency (80% of experts and 75% of teachers); it should be noted that this problem is associated with the need to purchase expensive equipment and update teaching materials. Another significant barrier is the low level of teachers' professional readiness (60% of experts and 55% of teachers).

To minimize the existing difficulties, they believe that an effective solution would be additional financing and strengthening of material and technical base (90% of experts and 85% of teachers), as well as additional professional development activities (85% of experts and 75% of teachers) to eliminate the deficit of professional skills among teachers.

The majority of experts (80%) and slightly more than half of teachers (65%) believe that the integrated system has a significant positive effect on the intellectual development of junior schoolchildren. The rest of the respondents assessed the impact as moderately positive (15% of experts and 25% of teachers), with only a few respondents (5% of experts and 10% of teachers) calling it insignificant.

In general, the conducted questionnaire survey confirmed the high value of the integrated teaching system, but at the same time pointed out serious problems related to the lack of funding and professionalism. And pointed out that the elimination of these obstacles would create real conditions for the wide dissemination of the integrated learning system and improving the quality of intellectual development of junior schoolchildren.

Results of interviews with three experts and three teachers. Experts unanimously support the expediency of introducing a phased integrated system of education, but point to the need for improvements in infrastructure and teacher professional development. While elementary school teachers point out obvious advantages regarding the phased integrated approach and are more concerned about the lack of available methodological resources, technical lag of modern elementary school and the role of family in these issues

The model of step-by-step complex intellectual development of elementary school students provides a combination of organizational, content and procedural components

aimed at improving the effectiveness of intellectual development of junior schoolchildren. The main task of the model is to provide a comprehensive approach to the formation of intellectual qualities, combining cognitive and activity aspects of learning, which creates optimal conditions for the disclosure of each child's intellectual potential and gradually develops his intellectual abilities such as perception, thinking, memory, imagination and creativity. The components of the model are:

1. Organizational, based on: the development of an individual educational route for each student; the creation of favorable conditions for learning (material and technical base, microclimate in the team, motivating atmosphere): periodic joint activities that promote socialization and development of intelligence in children;

2. Content, includes: interdisciplinary connecting lines, which ensure the integrity of the perception of educational material by junior schoolchildren; creative, research and project forms of work, which activate the cognitive activity of the child; health-saving technologies that create a physiologically comfortable environment for learning children;

3. Processual, which includes: adopting and maintaining the principle of continuity not only between preschool and primary education, but also between primary and basic school. Since it is necessary to make a gradual transition of children from preschool education to prepare them as elementary school graduates for the requirements of the next stage of education, so that adaptation is easier. The process component also includes a wide range of active learning methods (from role-playing to problem solving, discussion, and simple research). The organization of work is carried out to develop self-realization and cooperation in the form of individual and group sessions.

The model is based on the following psychological and pedagogical conditions of increasing the effectiveness of intellectual development of junior schoolchildren:

1. Diagnostic support: initial (at the entrance), periodic (at the end of the school year and half-year) and final (at the end of the school year) diagnostics of cognitive abilities, level of readiness for learning in primary and then to the main school, personal characteristics and interests of the child.

2. Conscious motivation of learning: formation of children's conscious attitude to learning, desire to learn new things, to improve their competence at the elementary school level.

3. Activation of cognitive activity: inclusion of pupils in active forms of work requiring independent design of situations, information search and decision-making.

4. Application of game-based learning: games in junior school remain the leading method of teaching junior schoolchildren, provided they stimulate their interest and involvement in the process of learning and cognition.

5. Social and communication skills: in elementary school it is important to develop communication skills, mutual assistance, the ability to work in a group, to listen to the opinion of the teacher and classmates.

6. Prioritizing health and ensuring psychological safety: elementary school education is built in an atmosphere of kindness, trust, goodwill, respectfulness and freedom of expression regarding knowledge; maintaining an optimal regime of workloads, constant prevention of fatigue, organization of physical exercises and relaxation.

Stages of complex intellectual development of elementary school students are reflected according to Figure 1.

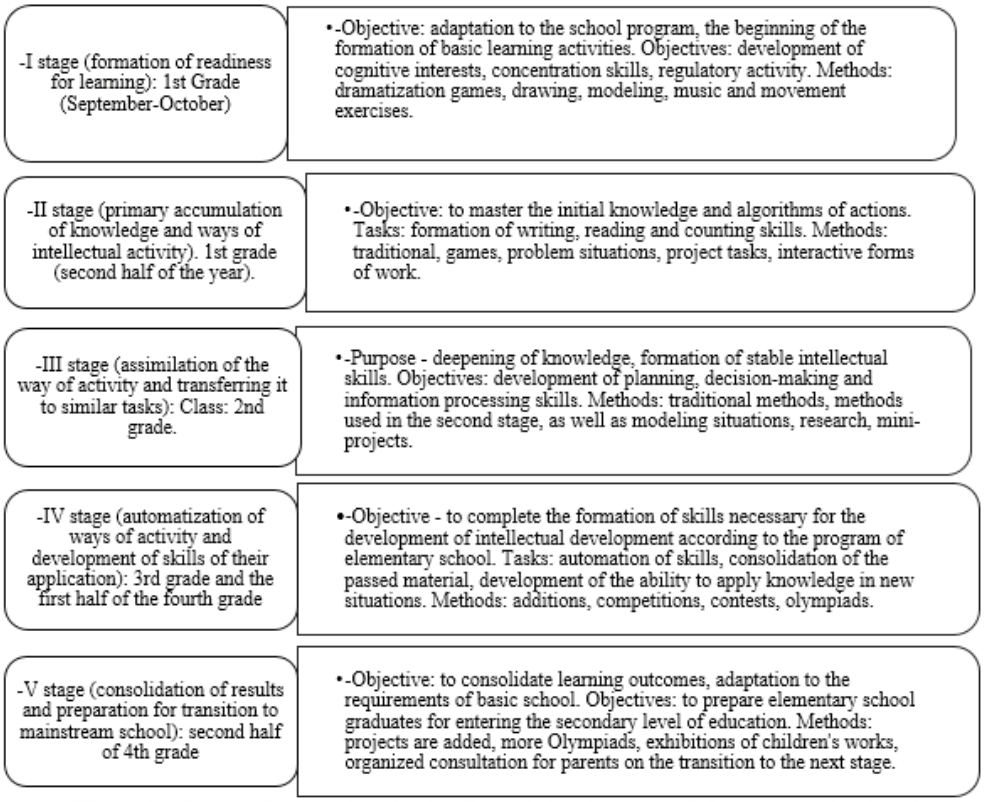

Figure 1 – Stages of comprehensive intellectual development of elementary school students

The following integrated learning activities were carried out as part of the experiment (4th grade, second half of the year)

The purpose of the experiment is to test the effectiveness of the model of integrated learning, which provides quality preparation of 4th grade students for the transition to basic school and consolidation of acquired knowledge and skills.

Key Objectives

1. Formation of an integrated approach to learning, including cross-curricular links and creative activities.

2. Increasing the level of intellectual development of students to the level of transition to basic school.

3. Adapting students to selected instructional technologies in mainstream school.

Duration of the experiment: 5 months (January – May)

January

Introductory diagnostics: Determination of the level of intellectual development, formation of learning skills and motivation of students.

Means: complex diagnostics, including psychodiagnostics and testing of subject knowledge.

A week of integrated learning that combines different subjects.

Example: studying the topic «Natural riches of our country» using Kazakh language (names of natural riches in Kazakh), Russian language (creating essays), mathematics (tables and graphs of natural resources distribution), world knowledge (features of climate and nature).

Outcome: developing a holistic view of knowledge, connecting subject matter to life, and developing cognitive skills.

February.

1. Utilization of cross-curricular labs.

Description: Creating an environment where children are engaged in projects, experiments, and cross-curricular activities.

Example: making a model of the solar system (digital literacy – creating a computer animation of the planets, world knowledge – exploring space, math – calculating the sizes and orbits of the planets).

Result: development of system thinking skills, integration of knowledge from different spheres.

2. Conducting research papers.

Description: kids do small project-based investigations involving different subjects.

Example: researching the flora and fauna of the native land (world knowledge – species of plants and animals, digital literacy – creating a map of the fauna of the region, math – counting the number of species).

Result: development of research skills, cognitive activity, emotional response to the subjects of study.

March.

1. Intellectual marathon. Description: A series of competitions combining knowledge in several subjects. Example: a tournament for solving interdisciplinary problems

combining mathematics, world knowledge, digital literacy and foreign language. Result: increased motivation, creativity, demonstration of multifaceted knowledge.

2. Thematic weeks. Description: a week is devoted to a certain theme, revealing it through the prism of different subjects. Example: thematic week «My family tree»: world knowledge (historical roots of families), Russian language (family legends and surnames), music (songs and folk dances), art (portrait of ancestors). Result: broadening of outlook, vivid associations, development of imagination and fantasy.

April.

1. Joint project work. Description: a group of children work together on a project that requires combining knowledge from different subjects. Example: a group prepares a project «The Beauty of the Native Land», where music (national melodies), art (painting of nature), world knowledge (description of the nature of the region), Russian language (reports on places of interest) are combined. Result: development of teamwork skills, creativity, cognitive activity.

2. Round tables and debates. Description: discussion of interesting topics that unite several subjects. Example: round table «Human Health», where nutrition (man and society), hygiene (medicine), healthy lifestyle (physical education), benefits of sports (mathematics – statistics of sports records) are considered. Result: development of argumentative thinking, ability to listen to and discuss opposing points of view.

May.

1. Creative fairs. Description: pupils prepare exhibitions and activities that bring together knowledge and talents. Example: an exhibition of creative works, where children's drawings are accompanied by messages about famous writers (literary reading), compositions of musical works (music), tables of historical facts (man and society). Result: demonstration of uniqueness and originality of each child, development of aesthetic taste and artistic thinking.

2. Sports and learning about the world. Description: sports activities with a local history bias. Example: weekend hike with elements of local history (learning about the world), collecting herbarium of plants (math – counting collected specimens). Result: physical development and patriotic education at the same time.

3. Preparation for graduation. General class activities symbolizing the end of elementary school and the opening of a new stage.

Final diagnostics to assess the dynamics of intellectual development. Final monitoring of the level of skills and abilities formation.

Comparative analysis of diagnostic results at the beginning and the end of the experiment. The results of testing the level of intellectual development using Raven's test («Progressive Matrices») in both groups are presented in Table 2.

Table 2 – Results of intellectual development testing

Parameter	At the beginning of		At the end of	
	CG (n=32)	EG (n=30)	CG (n=32)	EG (n=30)
Raven's test (IQ score)	102 ± 5	101 ± 6	103 ± 5	107 ± 6
Russian language	78 ± 8	77 ± 9	80 ± 8	85 ± 9
Math	75 ± 7	74 ± 8	77 ± 7	82 ± 8
Reading	80 ± 9	79 ± 10	82 ± 9	88 ± 10
Initiative	4.5 ± 1.2	4.4 ± 1.3	4.6 ± 1.2	5.1 ± 1.3
Cognitive activity	4.6 ± 1.1	4.5 ± 1.2	4.7 ± 1.1	5.2 ± 1.2
Communicativeness	4.7 ± 1.0	4.6 ± 1.1	4.8 ± 1.0	5.3 ± 1.1

As a result of the conducted activities, there is a significant improvement of indicators in the experimental group in all parameters. The difference is especially pronounced in the indicators of intellectual development (Raven's test), the level of educational achievements (especially in Russian language and mathematics), as well as in the manifestation of initiative, cognitive activity and communication. The control group showed moderate positive dynamics, but was noticeably inferior to the experimental group in almost all indicators. The obtained data confirm the hypothesis and the effectiveness of the proposed model.

Conclusion

The section presents a systematization of the obtained results. It gives a brief formulation of the research results, justification of their significance. Describes the scientific novelty of the results, indicates the possible areas of their application, practical and scientific significance. The section should include a forecast of the development of the considered issues, present the prospects for further development of the main research problem.

The majority of interviewed experts and elementary school teachers believe that the stage-by-stage integrated teaching system has a positive impact on pupils' intellectual development, but they note significant difficulties in its implementation, mainly related to financing and teachers' qualification. The majority of respondents note the increase in funding and organization of professional development courses as effective measures to minimize difficulties.

The presented model of step-by-step complex intellectual development of elementary school students is aimed at maximizing the intellectual potential of each child, using diagnostics, interdisciplinary links, play, innovative technologies, cooperation and health saving. Such an approach will ensure the sustainability of intellectual development and allow each student to fully transition to study in the main school.

The results of experimental work confirm the effectiveness of the proposed model of step-by-step integrated learning aimed at the intellectual development of junior schoolchildren. Since there is a significant advantage of students of the experimental group compared to the control group, which confirms the validity of the proposed model.

Contribution of the authors:

H. Mertol – developed the theoretical and conceptual framework of the study, conducted a comprehensive literature review, and provided scientific supervision throughout the research. He also contributed to the formulation of the phased integrated learning model and participated in the design of diagnostic tools for assessing intellectual development.

M. Bolatkyzy – bolat was responsible for organizing and conducting the empirical part of the research, including experimental implementation in schools, data collection, and statistical analysis. She also developed practical recommendations for teachers and participated in drafting the manuscript, especially in the sections on methodology and experimental results.

Both authors collaborated on interpreting the findings and finalizing the manuscript. The contribution of each author is considered equal in terms of intellectual input and preparation of the final version of the article.

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Кезең-кезеңмен кешенді оқыту бастауыш мектеп оқушыларының зияткерлік дамуының факторы ретінде

Аннотация. Бұл мақалада қазіргі жағдайда бастауыш мектеп оқушыларының зияткерлік дамуының маңызды факторларының бірі болып саналатын кезең-кезеңмен кешенді оқыту

мәселелері ашылады. Зерттеу кезең-кезеңмен кешенді тәсілдің бастауыш сынып оқушыларының зияткерлік дамуына әсерін анықтау мақсатында жүргізілді. Негізгі идеялар ретінде анықталғандар: кіші мектеп жасындағы балалардың кезең-кезеңмен кешенді зияткерлік дамуының қолданыстағы тұжырымдамалары мен модельдері дамуды қажет етеді; бастауыш мектепте кезең-кезеңмен кешенді оқытуды жүзеге асыру ерекшеліктері мен мүмкіндіктерін зерттеу оқушылардың зияткерлік жетістіктерінің деңгейін арттыруға бағытталған кезең-кезеңмен кешенді оқытудың инновациялық педагогикалық технологияларын (модельдерін) енгізу бойынша ұсынымдар әзірлеуге мүмкіндік береді; ұсынылған ұсынымдардың тиімділігін эксперименталды түрде растау маңызды.

Бастауыш мектеп оқушыларының зияткерлік дамуының факторы ретінде кезең-кезеңмен кешенді оқытуды зерттеу педагогикалық ғылым мен практиканың қазіргі бағыттарына құнды қосымша болып табылады, өйткені ол кіші мектеп оқушыларының зияткерлік даму механизмін тереңірек зерттеуге мүмкіндік берді және олардың зияткерлік даму оқытуындағы жоғары нәтижелерге қол жеткізуге ықпал ететін тиімді стратегиялар анықталды. Білім беру сатылары арасындағы сабақтастықты және біркелкі зияткерлік дамуды қамтамасыз ететін кезең-кезеңмен оқытудың жаңа моделі ұсынылған.

Білім беру технологияларының тиімділігін объективті бағалауға мүмкіндік беретін зияткерлік дамуды диагностикалаудың бірегей әдістемесі әзірленді. Бастауыш мектеп жасындағы балалардың зияткерлік дамуы үшін жағдай жасау бойынша ұсынымдардың практикалық маңыздылығы бастауыш мектептің педагогтары мен әкімшілігіне бағытталған.

Кілтті сөздер: кезең-кезеңмен кешенді оқыту, зияткерлік даму, бастауыш мектеп, оқушылар, модель.

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Поэтапное комплексное обучение как фактор интеллектуального развития учащихся начальной школы

Аннотация. В настоящей статье раскрываются проблемы поэтапного комплексного обучения, которое в современных условиях считают одним из важных фактов интеллектуального развития учащихся начальной школы. Исследование проведено с целью установления влияния поэтапного комплексного подхода на интеллектуальное развитие у учащихся начальных классов. Определены основные идеи: существующие концепции и модели поэтапного комплексного интеллектуального развития младших школьников требуют своего развития; изучение особенности и возможности реализации поэтапного комплексного обучения в начальной школе позволит разработать рекомендации по внедрению инновационных педагогических технологий (модели) поэтапного комплексного обучения, направленных на повышение уровня интеллектуальных достижений учащихся; важно экспериментально подтвердить эффективность предложенных рекомендаций. Исследование поэтапного комплексного обучения как фактора интеллектуального развития учащихся начальной школы представляет собой ценное дополнение к современным направлениям педагогической науки и практики, так как позволило глубже изучить механизм интеллектуального развития младших школьников и установить эффективные стратегии, способствующие достижению высоких ре-

зультатов в их интеллектуальном развитие обучении. Предложена новая модель поэтапного обучения, обеспечивающая преемственность между ступенями образования и равномерное интеллектуальное развитие.

Разработана уникальная методика диагностики интеллектуального развития, позволяющая объективно оценить эффективность образовательных технологий. Практическая значимость рекомендации: создание условий для интеллектуального развития детей младшего школьного возраста, направленная на педагогов и администраторов начальной школы.

Ключевые слова: поэтапное комплексное обучение, интеллектуальное развитие, начальная школа, ученики, модель.

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