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CONTEMPORARY STRATEGIES FOR BUILDING KEY COMPETENCES IN EARLY CHILDHOOD EDUCATION

ESTRATÉGIAS CONTEMPORÂNEAS PARA O DESENVOLVIMENTO DE COMPETÊNCIAS-CHAVE NA EDUCAÇÃO INFANTIL

ESTRATEGIAS CONTEMPORÁNEAS PARA EL DESARROLLO DE COMPETENCIAS CLAVE EN LA EDUCACIÓN INFANTIL

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ABSTRACT: The article evaluates the effectiveness of modern methodological approaches in developing key competencies in early childhood education. Methods included literature analysis, the study of pedagogical innovations, questionnaires with parents and educators, and experimental research. The competencies addressed include health, communication, language, social relationships, personal development, cognitive, play-based, and environmental aspects. The study proposes pedagogical strategies categorized into traditional and innovative approaches, with emphasis on contemporary methodologies such as STEAM integration, use of sensory zones, and mindfulness techniques.

KEYWORDS: Competences of preschool children. Methodological approaches. Health-saving competence. Communicative interaction. Game activity.

RESUMO: *O artigo avalia a eficácia de abordagens metodológicas modernas no desenvolvimento de competências-chave em crianças da educação infantil. Foram utilizados métodos como análise de literatura, estudo de inovações pedagógicas, questionários com pais e educadores, e pesquisa experimental. As competências analisadas envolvem saúde, comunicação, linguagem, relações sociais, desenvolvimento pessoal, aspectos cognitivos, lúdicos e ambientais, entre outros. O estudo propõe estratégias pedagógicas divididas em abordagens tradicionais e inovadoras, com ênfase nas metodologias contemporâneas, como a integração do STEAM, uso de zonas sensoriais e técnicas de mindfulness.*

PALAVRAS-CHAVE: *Competências de crianças pré-escolares. Abordagens metodológicas. Competência de preservação da saúde. Interação comunicativa. Atividade lúdica.*

RESUMEN: *El artículo evalúa la eficacia de los enfoques metodológicos modernos en el desarrollo de competencias clave en la educación infantil. Se utilizaron métodos como el análisis de literatura, el estudio de innovaciones pedagógicas, cuestionarios con padres y educadores, y una investigación experimental. Las competencias tratadas incluyen salud, comunicación, lenguaje, relaciones sociales, desarrollo personal, aspectos cognitivos, lúdicos y ambientales. El estudio propone estrategias pedagógicas clasificadas en enfoques tradicionales e innovadores, con énfasis en metodologías contemporáneas como la integración STEAM, el uso de zonas sensoriales y técnicas de mindfulness.*

PALABRAS CLAVE: *Competencias de niños preescolares. Enfoques metodológicos. Competencia de preservación de la salud. Interacción comunicativa. Actividad lúdica.*

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INTRODUCTION

Digitalization, globalization, and the changes of the modern age require the constant updating of the education system and approaches to learning, starting from preschool age. In the context of preparing children for school and adaptation to society, it is necessary to develop critical competencies in preschool children. These competences include not only the range of knowledge and skills required for children but also values, social skills, and the ability to communicate, take care of their health, solve problems, think critically, and be creative in solving problems. During the formation of a preschool child's personality, cognitive processes are actively developed, and self-regulation and emotional intelligence are formed.

International and national educational standards define vital competences, including health, communication, social, subject matter, practical, gaming, natural science, artistic, and productive functions. The development of technology and the impact of digitalization pose new challenges for teachers who need to integrate innovative technologies into the educational process and focus on the active involvement of children in the learning process, the development of emotional intelligence, creative thinking, and teamwork. The effectiveness of implementing modern methodological approaches to forming critical competences affects the development of the child's personality and its further integration into the educational process.

The motivational, content, and activity components are determined as the constant elements of preschoolers' competence. The motivational component develops as the preschooler's direct attitude toward diverse tasks, demonstration of cognitive interest, and awareness of the role of acquired knowledge and skills in everyday life. The content component is seen as the process and result of gaining knowledge within the program for the relevant age group. At the same time, the activity component should be seen as the process of preschoolers learning constructive and control-evaluative actions.

Given the above, the problem of child development in the sensory-cognitive preschool educational space is currently relevant and necessary in view of the active dynamics of the educational environment and the shift in emphasis in primary education. There is a need to form stable skills of reasoning and proving the correctness of one's judgments in preschoolers.

The purpose of the article is to analyze strategies for developing key competencies of preschoolers in the modern educational environment.

Literature Review

In the study context, it is necessary to analyze methodological approaches to forming key competences in preschool children. The authors outlined the impact of maternal parenting behaviour on the school adaptation of a child in the first year of primary school based on indicators of

the child's self-esteem, which is formed during the preschool period (Kang & Gim, 2022). During the transition from the preschool stage to primary school, parents and children develop anxiety, and ways to overcome this problem are identified based on the questionnaire of parents' educational anxiety during the transition from kindergarten to primary school (Dai & Liu, 2020).

Rationally arranging family-centred early education content and providing adequate space for children leads to developing strategies to improve positive discipline (Jiang & Yuan, 2020). Learning music is essential for the musical development of preschool children and reduces cognitive load. An interactive prototype of Music Magician, designed for preschool children to learn music, was presented, along with the completion of an interactive library (Xie & Li, 2022). This study evaluates the effectiveness of a child's interaction with a social robot, HaKsh-E. It was found that personal interaction with a robot can lead to a more profound and more effective learning experience (Manikutty et al., 2024).

With the development of the Internet, cloud computing, and big data technology, more and more attention has been paid to the intellectualization and informatization of preschool education. Research shows that the model of preschool education in the era of big data has far-reaching implications for reforming the preschool education model (Li & Liu, 2020). The introduction of video, interactive, and graphic educational content based on 3D models positively impacts the quality of education (Dotsenko et al., 2023). High-quality preschool programmes have been shown to generate significant initial academic gains and long-term benefits for students as they progress through school (Muschkin et al., 2024). To achieve the goals of equitable, high-quality access to primary school and narrowing opportunity gaps before kindergarten, more research and policy attention to the equity of mixed learning policies may be needed (Weiland et al., 2024).

The pedagogical benefits of preschool children's acquisition of English as a second language alongside their mother tongue and native culture are investigated (Khomyshak, 2024). The study focuses on the problem of primary English teachers' mastery of specific skills in using questions as an effective tool. The authors conclude that it is mandatory to include special sequential training, which covers first purely practical courses with a gradual transition to theoretical and practical ones and, finally, teaching practices as the final step to improve children's competences (Yeremenko et al., 2022). Thus, while analysing the literature on the development of preschool children's competences, modern methodological approaches to preschool education are being integrated.

Research Methods

1. Analyzing literature on preschool children's education and modern methodological approaches to forming key competences allows us to determine which methods most fully form the outlined competences.

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2. Questionnaires and surveys of educators and parents allow for collecting data on how methods and approaches influence the development of children's competences, taking into account adult observations based on a competence development questionnaire developed by the levels of their formation.

3. Experimental research is based on comparing the indicators of the control and experimental groups to assess the effectiveness of modern methodological approaches to forming key competences and the complete formation of these competences.

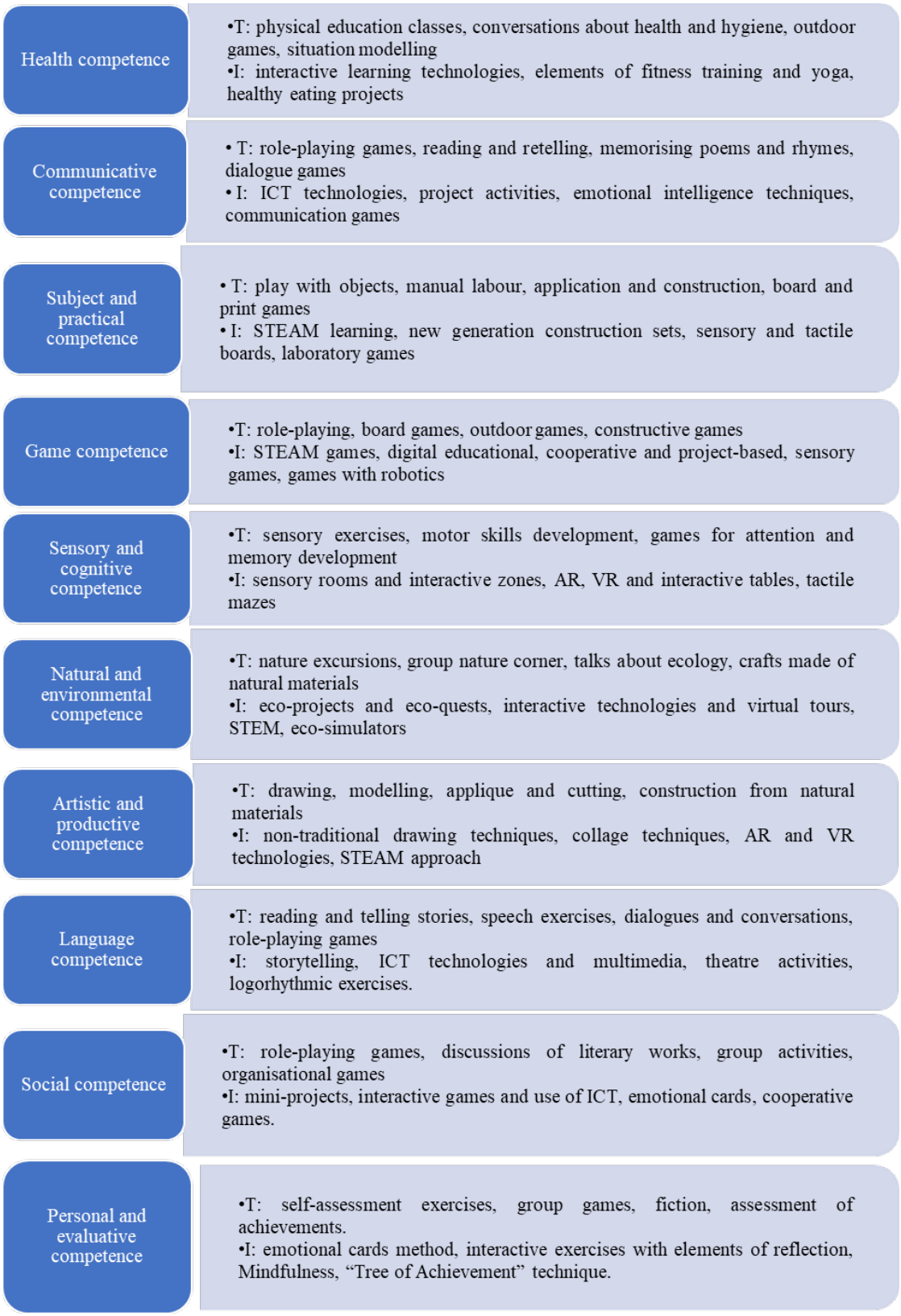
Research Results

The State Standard of Preschool Education in Ukraine defines the Basic Component of Preschool Education, which sets out the requirements for mandatory competences and educational outcomes for preschool children, as well as the conditions under which international standards of educational quality can be achieved. A preschool child is a person aged three to six years with physiological and psychological characteristics, worldview, needs, and life experience inherent in his or her age. Competence is a dynamic combination of knowledge, skills, abilities, ways of thinking, attitudes, values, and other personal qualities that determines a person's ability to successfully socialize, conduct professional and/or further educational activities. The key competences that children acquire at the stage of preschool education are identified: health, communicative, subject-practical, game, as well as sensory and cognitive, natural and ecological, artistic and productive, speech, social, and personal assessment (Order of the Ministry of Education and Science, Youth and Sports of Ukraine No. 615, 2012). Modern methodological approaches to forming key competences in preschool children are presented; each block of these approaches is conditionally divided into traditional and innovative approaches. To enhance the development of critical competence in preschool children, it is proposed that traditional and innovative methods be integrated, as illustrated in Figure 1.

The development of gaming competence activates attention, teaches self-control and interaction, and helps to learn about the world around us. Role-playing games allow for modelling social situations and teach interaction, helping master social norms. During board games, children acquire strategic planning skills, and during outdoor games, they develop coordination, endurance, and the ability to interact in a team. Building during constructive games develops motor skills, spatial attention, and creativity. STEAM and cooperative games include interactive exercises and mini-projects that develop creative thinking and teamwork skills. Digital educational games based on AR and robotics develop cognitive skills and provide an opportunity to get acquainted with modern technologies. Sensory games help develop perception, coordination, and concentration.

The development of language skills, vocabulary, and the ability to express their thoughts is the main component of preschool children's language competence. Fairy tales expand vocabulary and teach children new language structures. Articulation exercises help children develop pronunciation clarity and improve diction. The use of conversations stimulates communication skills, and role-playing is used to model situations. Storytelling is based on digital and interactive narratives, which develop language, thinking, and imagination. Apps for learning words and sounds, animated short films, or educational cartoons help to learn the language quickly. By acting out stories, children convey emotions, express thoughts, and develop expressive language. Logorhythmic exercises help to synchronise speech with movements, develop motor skills, and strengthen the speech apparatus.

Figure 1. Integration of traditional (T) and innovative (I) methodological approaches to the formation of key competences in preschool children



Source: developed by the author.

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The development and formation of social competence are aimed at the successful socialisation of preschool children and mastering communication and teamwork skills. The joint activities of preschool children contribute to developing cooperation and responsibility. Games with rules help children understand the importance of following rules and order and develop skills to manage their actions. Implementing mini-projects allows children to work on tasks in a team and distribute responsibilities, and introducing interactive whiteboards and educational applications with teamwork tasks helps develop cooperation skills. Tasks where children have to build models or solve engineering problems together help to develop cooperation skills and role distribution.

The personal and evaluative competence of preschool children is formed based on the development of self-esteem, mastery of emotions, and the acquisition of reflection skills. Self-reflection on preschool children's actions and comparing their achievements with others helps form adequate self-esteem and promotes socialisation. Through the use of fiction, children analyse the emotions of characters and learn to express their own. To learn to recognise their feelings, children can be offered a set of cards and exercises that use a mirror or audio recordings of the child's voice, while focusing techniques help children develop self-control and awareness. To visualise successes, the "Tree of Achievement" technique is used to help build positive self-esteem.

To evaluate the effectiveness of using modern methodological approaches in forming key competences in preschool children, indicators of their acquisition have been developed. The formation of competences in preschool children can be carried out at high (HL), medium (ML), and sufficient (SL) levels. In order to assess the development of preschool children's competences by educators, parents, and methodologists, an assessment table (Table 1) was developed based on indicators of competence acquisition, which are divided into levels.

Table 1. Evaluation of indicators of key competences in preschool children by levels

Competência	Levels Acquiring competence	Indicators of competence acquisition
Health-preserving competence (K1))	HL	Conscious adherence to the rules of personal hygiene, active participation in health activities, and correct and independent exercise.
	ML	Partial compliance with the rules of personal hygiene and participation in recreational activities with the help and guidance of adults.
	SL	Follow the rules of personal hygiene and participate in physical activities only with reminders and help from adults.
Communicative competence (C2)	HL	The ability to clearly express your thoughts, listen and understand the interlocutor, and show empathy and respect for the opinions of others.
	ML	Ability to express opinions, understanding of others, situational difficulties in communication, and need for assistance.
	SL	Ability to communicate with others with constant support or stimulation.
Subject and practical competence (K3)	HL	Free use of objects for their intended purpose, showing initiative in solving practical problems.
	ML	Mostly correct use of items, but there is a need for reminders and examples for practical tasks.
	SL	Poor orientation in subject and practical activities and the need for constant adult support.
Game competence (K4)	HL	Independent creation of story games, demonstration of creativity, ability to resolve conflict situations.
	ML	Participation in role-playing games was provided, and adults provided guidance and support in resolving conflicts.
	SL	Showing interest in games with help in organising and supporting the game.
Sensory and cognitive competence (K5)	HL	Confidently distinguishing the properties of objects, showing an active interest in the world around them, and learning new subjects independently.
	ML	Showing interest in learning about and distinguishing properties of objects when stimulated by adults.
	SL	They show interest in the world around them with adults' support and assistance distinguishing objects' properties.

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Natural and environmental competence (K6)	HL	Careful attitude to nature, showing interest for plants and animals, and a commitment to protecting the environment.
	ML	Awareness of the basic rules of handling nature and situational need to remind these rules.
	SL	Awareness of basic environmental rules with constant support and reminders.
Artistic and productive competence (K7)	HL	Free and creative expression of the child in artistic activities and experimentation with materials.
	ML	Participation in creative activities provided that familiar techniques are repeated and examples are provided.
	SL	Participation in artistic activities with assistance and guidance at every stage.
Speaking competence (Q8)	HL	Fluent and confident language skills, building logical statements, maintaining a conversation.
	ML	The ability to communicate and express opinions, the need for prompts to build logical sentences.
	SL	The ability to express thoughts, fragmented speech and the need for assistance with speech.
Social competence (K9)	HL	Active participation in collective activities, adherence to rules and the ability to negotiate with others.
	ML	Participating in group games and activities, reminding them of the rules and providing support when interacting as needed.
	SL	Adults need help participating in collective activities and following rules.
Personal assessment competence (K10)	HL	Awareness of the child's strengths and weaknesses, adequate assessment of actions, and positive self-esteem.
	ML	There is partial awareness of the child's personal qualities, situational manifestations of insecurity, and the need for support in assessing their actions.
	SL	Children need support to understand their actions, and they frequently rely on an adult's opinion.

Source: compiled by the author.

High, medium, and sufficient levels characterise the development of key competences in preschool children. These levels indicate the extent to which a child has mastered specific skills and how successfully they are applied in different situations. At a high level, a child demonstrates fluency in competences, shows interest in learning and initiative to solve new problems, efficiently uses acquired skills in different contexts, and strives for self-improvement. At the intermediate level, the child demonstrates critical competencies in familiar situations but needs guidance and assistance in complex tasks. At a sufficient level, the child demonstrates

mastery of competences with the help of adults, prefers to follow a model, and has difficulty applying knowledge in unfamiliar situations. With basic skills and knowledge, they may have difficulty using them without support. They may have basic skills and knowledge, but face difficulty using them without support. With the help of these levels, teachers and parents can assess the degree of development of key competences in a preschool child and adjust further teaching strategies.

The table of indicators of competence acquisition according to levels aims to track progress in developing critical competences in school-age children and to timely correct the educational process. According to Table 1, a survey was conducted among parents and educators while studying the development of key competences in preschool children. The respondents noted the level of competence acquisition by the indicators outlined in Table 1.

In the course of processing Table 2 by educators, parents, and methodologists, the surveyed respondents were divided into control and experimental groups; the control group of children surveyed used traditional methodological approaches, while the experimental group used the integration of traditional and innovative methodological approaches to the formation of key competences in preschool children. The control group included 100 representatives of children (parents and educators), and the experimental group included 101 representatives of preschool children. The essence of the experiment was to integrate innovative and traditional methodological approaches and determine the effectiveness of their formation of key competences in preschool children.

Table 2 presents the generalised results of developing critical competences in preschool children before the experiment in percentage terms.

Table 2. Results of the formation of key competences in preschool children before the experiment

Competences /Levels	CG before the experiment			EG before the experiment		
	SL, %	ML, %	HL, %	SL, %	ML, %	HL, %
К1	31.30	44.60	24.10	32.45	44.45	23.10
К2	32.60	42.40	25.00	33.70	38.10	28.20
К3	35.40	42.60	22.00	36.20	36.30	27.50
К4	29.10	43.71	27.19	34.16	30.30	29.80
К5	30.20	40.80	29.00	32.00	36.45	31.55
К6	28.70	47.19	24.11	31.15	42.32	26.53
К7	29.70	42.30	28.00	32.24	36.76	31.00
К8	29.10	44.90	26.00	34.26	37.62	28.12
К9	31.60	37.40	31.00	32.50	36.35	31.15
К10	28.20	42.80	29.00	31.15	37.85	31.00
Medium indicator	30.59	42.87	26.54	32.98	37.65	28.80

Source: compiled by the author.

Table 3 shows the generalised formation of key competences in preschool children after the experiment in percentage terms.

Table 3. The results of the formation of key competences in preschool children after the experiment

Competences /Levels	CG after the experiment			EG after the experiment		
	SL, %	ML, %	HL, %	SL, %	ML, %	HL, %
K1	30.30	44.60	25.10	12.45	58.45	29.10
K2	31.60	41.40	27.00	13.70	51.10	35.20
K3	29.40	44.60	26.00	16.20	49.30	34.50
K4	28.40	42.41	29.19	14.16	30.30	35.80
K5	29.40	41.60	29.00	12.00	50.45	37.55
K6	30.40	41.49	28.11	11.15	54.32	34.53
K7	30.40	38.60	31.00	12.24	47.76	40.00
K8	28.40	42.60	29.00	14.26	48.62	37.12
K9	29.40	36.60	34.00	12.50	45.35	42.15
K10	27.40	41.60	31.00	11.15	49.85	39.00
Medium indicator	29.51	41.55	28.94	12.98	48.55	36.50

Source: compiled by the author.

Tables 2 and 3 present the following conventions: K1, K2, K3, K4, K5, K6, K7, K8, K9, K10—key competences of preschool children (according to Table 1); EG, CG—experimental and control groups; HL, ML, SL—high, medium, and sufficient levels of competence formation in preschool children. The average indicator of competence formation is the generalised value of forming key competences in preschool children.

When comparing the indicators of the formation of key competences in preschool children for the experimental group, it was found that the average sufficient level decreased by 20% due to an increase in the average level by almost 11% and an increase in the high level by 8%, which indicates an increase in the number of children with high and average indicators of competence formation in preschool children after the use of modern methods of forming key competences, which indicates the effectiveness of the work.

DISCUSSION

Modern methodological approaches to forming key competences in preschool children reflect the constant search for practical tools for the child's comprehensive development. Modern preschool education aims to prepare children for school and develop essential skills that facilitate societal adaptation.

Research has pointed to the importance of spatial thinking in children as an essential factor in determining later success in STEM-related fields. The authors explore the potential of using embodied activities with robots to help develop children's spatial perspective. The activity design presented is inspired by the dynamic and mental processes associated with remote-controlled cars and racing games developed with the Cozmo robot. It involves guiding the robot through a maze, considering the robot's point of view (Yadollahi et al., 2022).

The authors created and evaluated a new version of the TechCheck Computational Thinking test, explicitly designed for kindergarten students, which consists of similar unconnected tasks but reduces the number of response options from four to three and uses only non-verbal material in responses to accommodate younger children who are not yet literate. The results of this pilot study show that the TechCheck-K has acceptable characteristics for assessing computer technology use in kindergarten children (Relkin & Bers, 2021). Traditional programmes that focused on regimented learning activities are gradually being replaced by more accessible forms of work, where teachers are allowed to vary methods depending on the needs of children in order to raise a healthy, socially active and emotionally mature personality, and to do so, use a combination of modern methodological approaches to the formation of critical competences in preschool children.

The issue of forming and developing competencies in preschoolers was among Splinter's scientific interests (Splinter et al., 2024). The author has developed an improved methodology for forming elementary mathematical concepts in older preschoolers. It is worth agreeing with the authors on the effectiveness of modern methodological approaches to the formation of each of the key competencies in preschool children. At the same time, the researcher did not pay attention to the possibilities of using sensory zones and awareness techniques.

In general, modern researchers analyze the general methodological and theoretical foundations of the formation of basic competencies in preschool children, study the processes of transformation of the preschool education system, and identify the conceptual foundations of strategies for its development. At the same time, Grüneisen et al. (2023) propose various forms, means, and approaches to the formation of basic knowledge, skills, and abilities in preschoolers, researching the methodology of algorithmic thinking development. The author emphasizes the need for preschoolers to have a stable, well-formed ability to reason and prove the correctness of their judgments. The conclusions of the researchers correlate with the results of the current study, which indicates the relevance of the proposed ways to optimize the process of preschool education.

It is evident that today, a comprehensive upgrade of the educational environment in preschool institutions is becoming particularly relevant for the intensive development of children in the sensory and cognitive world. Special attention should be paid to the concept of

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monitoring the competencies of preschoolers, which will allow identifying the level of effectiveness and further adjusting educational strategies in primary education.

Among the optimization measures, it is advisable to propose the following:

- Expanding the potential of the subject-developing environment of the group room;
- Integration of systematic pedagogical activities in the context of developing logical and mathematical competencies through STREAM education;
- Ensuring subject-subject interaction in the "teacher-child" format.

FINAL CONSIDERATIONS

The purpose of the article was to analyze strategies for developing key competencies of preschoolers in the modern educational space. As the results of the study show, the problem of developing key competencies of children in the sensory-cognitive preschool educational space requires a shift in the focus of primary education towards the development of sustainable skills and abilities in health-saving, communicative, sensory-cognitive, subject-practical, play, natural-ecological, linguistic, social, artistic-productive, personal, and evaluative-resultative spheres. Modern methodological approaches to the formation of each of these competencies involve the use of innovative methods—STEAM approaches, the use of sensory zones, and mindfulness techniques.

The study concludes that it is necessary to integrate traditional and innovative methods to ensure the child's total development. There is a need for an integrated approach to the formation of competences: For the effective development of critical competences, such as health, communication, sensory-cognitive, and social, it is necessary to integrate various methods and technologies that consider the individual characteristics of children, their interests, and needs. The article reviews the literature on the issue of introducing modern methodological approaches to the formation of key competences in preschool children. It outlines the critical competences of preschool children and their features.

The effectiveness of applying modern methodological approaches to forming key competences in preschool children has been experimentally tested. It has been determined that combining traditional and innovative methodological approaches increases the formation of the outlined competences at high and medium levels, which ensures an increase in the overall level of competence acquisition. This approach contributes to the comprehensive development of preschool children, creating a solid foundation for their further successful learning and socialization.

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