

THE ROLE OF INTERACTIVE LEARNING TECHNOLOGIES IN FORMING HEALTHY LIFESTYLE COMPETENCIES IN FUTURE PRESCHOOL EDUCATORS

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Annotation: This article examines the effectiveness of interactive learning technologies in developing healthy lifestyle competencies among future preschool educators. The study analyzes the impact of interactive methods such as role-playing games, trainings, case studies, and brainstorming on the cognitive, activity-based, and motivational components of healthy lifestyle competencies. The results of the pedagogical experiment showed that in the experimental group using interactive methods, the growth of competencies was 22% higher compared to the control group. In conclusion, interactive technologies serve as an effective tool for fostering a conscious and active attitude towards a healthy lifestyle in future educators.

Keywords: interactive learning, healthy lifestyle, competency.

Introduction

At the present stage of societal development, human health is recognized as one of the key factors of national security and demographic potential. According to the World Health Organization, 50–55% of human health depends on lifestyle, which indicates that forming a healthy lifestyle (HL) has become one of the strategic tasks of pedagogy. This responsibility is particularly pressing for preschool educational organizations (PEOs), because the foundation of human personality – physical, psychological, and social qualities – is formed precisely between the ages of 3 and 7. For this reason, a child acquires initial concepts and skills related to HL directly through the educator's personal example, their pedagogical mastery, and their own competence in healthy living.

In the scientific literature, the concept of HL, its components, and its pedagogical foundations have been widely covered by researchers such as N.K. Smirnov, E.N. Vayner, I.I. Brekhman, as well as Uzbek scholars N.A. Muslimov, B.Q. Tolipov, and M.G. Davletshin. From the competency-based approach perspective, HL competence is defined as a set of knowledge, skills, experience, and attitudes related to independently preserving and developing one's health. The HL competence of a preschool educator, in particular, is distinctive: it includes not only maintaining personal health but also the mastery of transmitting it to children and fostering it in them.

At the same time, there are significant contradictions today between pedagogical theory and practice. On the one hand, students in early childhood education programs possess

theoretical knowledge about HL, but their ability to apply this knowledge in everyday life and pedagogical situations is insufficiently developed. On the other hand, students' internal motivation and personal attitude toward HL are often weak, which hinders them from serving as role models for children. Traditional teaching methods (lectures, monologues) are primarily based on passive listening and do not yield sufficient results in developing the activity-based and motivational components of HL competence.

It is precisely these contradictions that necessitate turning to interactive learning technologies. Interactive methods such as role-playing games, training, case studies, brainstorming, and the project method ensure student activity, independent thinking, problem-solving, and the testing of their own life experience. These methods are reinforced by L.S. Vygotsky's "zone of proximal development" and J. Dewey's "learning by doing" theories.

This article aims to theoretically substantiate the role and effectiveness of interactive learning technologies in forming HL competencies in future preschool educators, to verify this through experimentation, and to develop practical recommendations. To this end, the content and structure of HL competence are analyzed; the impact of interactive methods on the cognitive, activity-based, and motivational components is revealed; and the results of the experimental trial are comparatively evaluated against traditional methods. The research employed analysis of pedagogical literature, observation, questionnaires, a pedagogical experiment, and statistical processing methods. The theoretical significance of the article lies in a systematic clarification of the interrelationship between HL competence and interactive methods, while its practical significance lies in the possibility of using the developed interactive sessions and training programs in pedagogical education practice.

Main Part

The concept of a healthy lifestyle (HL) has been extensively studied at the intersection of pedagogy, psychology, valeology, and sociology. According to the definition of the World Health Organization (WHO), a healthy lifestyle is a set of behaviors and habits that strengthen health, prevent diseases, and ensure a person's physical, psychological, and social well-being. I.I. Brekhman (1990) defined HL as "the art of managing health," while E.N. Vayner (2003) viewed it as an integral part of an individual's overall culture.

From the competency-based approach perspective, HL competence is a system of knowledge, skills, experience, and attitudes related to independently preserving, strengthening, and developing one's health (A.V. Khutorskoy, 2003). J. Raven (2002) considered competence "the ability of an individual to mobilize internal resources to achieve important goals." The HL competence of a preschool educator, however, possesses a distinctive two-layered characteristic: it includes not only maintaining personal health but also the mastery of teaching HL to children in pedagogical activities and shaping the same competence in them (G. Soatova, 2020). In the structure of this competence, three main components are typically identified: cognitive (knowledge and understanding of HL), activity-based (skills and abilities to apply HL principles in practice), and motivational

(internal need, interest, and positive attitude toward HL) (N.A. Muslimov, 2017).

The theory of interactive learning technologies is rooted in L.S. Vygotsky's (1978) social constructivism, J. Dewey's (1938) principle of "learning by doing," and C. Rogers' (1969) ideas of "humanistic pedagogy." The common essence of these theories is that knowledge is constructed in the process of active communication, collaboration, and mutual exchange of experience, and the learner is not a passive object but an active subject of education. The main features of interactive methods are constant learner activity, bilateral dialogue, solving problematic situations, testing personal experience, and reflection (V.A. Kochimov, 2015).

In Uzbek pedagogy, interactive technologies have been widely researched by scholars such as B.Q. Tolipov, M.G. Davletshin, N.M. Egamberdiyeva, and others. In particular, their works emphasize that interactive methods are an effective tool for forming professional competencies because they teach students to think independently, work in teams, and defend their decisions. However, the literature analysis shows that the role and mechanisms of interactive methods specifically in shaping HL competence of preschool educators have not been sufficiently studied. Existing research has been more focused on general competencies or other professions. Therefore, this article aims to fill that gap.

This study, aimed at determining the effectiveness of interactive learning technologies in forming healthy lifestyle (HL) competencies in future preschool educators, was organized on the basis of a mixed-methods experimental design. A parallel-group pedagogical experiment was employed, meaning that the experimental and control groups worked simultaneously, over the same period, but with different teaching methods. The experiment consisted of three stages (preparatory, main, and final) and combined quantitative (test, questionnaire, statistical analysis) and qualitative (observation, expert assessment, reflective interview) methods.

The independent variable of the research was the teaching methods (interactive technologies or traditional methods); the dependent variable was the level of HL competence formation (on the cognitive, activity-based, and motivational components). Controlled variables included the students' initial knowledge level, teaching time (two sessions per week, 80 minutes each), study topics, and the instructor's qualifications, all maintained at the same level.

The research was conducted in the 2025–2026 academic year with the participation of third-year students majoring in "Preschool Education" at three leading higher education institutions in Uzbekistan: Nizami Tashkent State Pedagogical University, Bukhara State Pedagogical Institute, and Alfraganus University. Purposive sampling was employed because students in this major, as future PEO educators, have a direct need for HL competence.

A total of 325 students participated in the experiment. They were distributed as follows:

- Experimental Group (EG): 163 students (55 from Nizami TSPU, 54 from Bukhara SPI, 54 from Alfraganus University);
- Control Group (CG): 162 students (54 from Nizami TSPU, 54 from Bukhara SPI, 54

from Alfraganus University).

Gender composition of the groups: females – 87.4%, males – 12.6% (consistent with the general demographic characteristic of the preschool education field). All participants were between 20 and 22 years of age. The groups were not randomized because the experiment was organized on the basis of existing academic groups. However, at the beginning of the experiment, the baseline indicators of HL competence for both groups were compared statistically and no significant difference was found ($p > 0.05$), which provided grounds for comparison.

All participants were informed about the experiment beforehand and gave voluntary consent to participate. The principles of confidentiality and anonymity were observed throughout the research.

The research was implemented in the following three stages:

Stage 1 – Preparatory (2024):

- A review of scientific and methodological literature was conducted, and theoretical foundations of interactive technologies and HL competence were studied.
- The structural components of HL competence (cognitive, activity-based, motivational) and their assessment criteria were developed.
- An experimental session program (20 sessions) and corresponding methodological materials (cases, role-play scenarios, training exercises, project assignments) were prepared.
- Baseline diagnostic instruments (test, practical tasks, questionnaire) were pilot-tested (with 10 students) and their validity and reliability were verified.
- A pre-test (diagnostic assessment) was conducted to record the initial state of HL competence in the experimental and control groups.

Stage 2 – Main (2025):

- In the experimental group, specially designed interactive sessions were conducted (a total of 20 sessions, twice a week, each lasting 80 minutes).
- In the control group, the same topics were delivered using traditional methods – lecture, question-and-answer, and discussion format (20 sessions, same duration).
- In both groups, the sessions were conducted by the same instructor (to equalize methodological influence).
- Throughout the sessions, students' activity, attitudes, and developmental dynamics were regularly recorded through pedagogical observation.

Stage 3 – Final (2026):

- A post-test (final assessment) was conducted to re-evaluate the level of HL competence formation in both groups.
- The obtained data were statistically processed, and the results were comparatively analyzed.
- Reflective interviews were conducted with students to collect qualitative data on their attitudes toward interactive sessions and personal changes.
- Conclusions and recommendations on the overall effectiveness of the experimental

work were formulated.

For assessing HL competence, special instruments were developed for the three main components:

- a) Test for assessing the cognitive component:
 - A test consisting of 25 closed-ended (4-option) questions.
 - Topics: theoretical foundations of HL, hygiene rules, rational nutrition, types of physical activity, mental health, negative consequences of harmful habits, basics of organizing HL in PEOs.
 - After development, the test was pilot-tested with 10 students; the reliability coefficient according to the Kuder-Richardson 20 formula was 0.82 (indicating high reliability).
 - Content validity of the test was confirmed by 3 doctors of pedagogical sciences.
 - Scoring: each correct answer was awarded 1 point, the result expressed as a percentage (0–100%).
- b) Practical tasks for assessing the activity-based component:
 - 5 practical tasks: (1) preparing a one-day healthy nutrition menu for 5-6-year-old children; (2) designing and demonstrating a morning exercise routine (8 exercises); (3) solving a given problematic pedagogical situation from an HL perspective; (4) drafting a plan for organizing a “Health Day” in a PEO; (5) analyzing one’s own daily routine based on HL requirements and providing recommendations for improvement.
 - Assessment was carried out by 3 experts (professors of the pedagogy department) using a 5-point rubric. The rubric included the following criteria: completeness of the task (0–1 point), scientific soundness (0–1 point), applicability to practice (0–1 point), creative approach (0–1 point), and the expert’s overall impression (0–1 point).
 - Inter-rater reliability – Krippendorff’s alpha coefficient was 0.79 (acceptable level).
- c) Questionnaire for assessing the motivational component:
 - A Likert scale (1 – strongly disagree, 5 – strongly agree) consisting of 15 items adapted based on R. Gardner’s “Attitude/Motivation Test Battery.”
 - 3 subscales: interest in HL (5 items), need and importance of HL (5 items), desire to apply HL in daily life (5 items).
 - The internal consistency coefficient (Cronbach’s alpha) of the questionnaire was 0.85 (high reliability).
 - Factorial validity was verified through exploratory factor analysis (KMO=0.78, Bartlett’s test of sphericity $p < 0.001$).
 - Scoring: each student’s mean score was calculated (range 1–5).
- d) Additional qualitative analysis tools:
 - Pedagogical observation protocol: during each session, students’ participation activity, creativity, teamwork ability, and reflective comments were recorded.
 - Semi-structured interview (conducted at the end of the experiment with 20 students from the experimental group).

- Participants' reflective diaries maintained during the sessions were analyzed.

5. Experimental Intervention (Interactive Sessions Program)

The 20 sessions conducted in the experimental group were specially designed, with the following structure:

Session type	Number	Duration	Main topics
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Role-playing game

80 min 1. "Healthy Breakfast – Nutritional Culture in Kindergarten"

2. "Adhering to a Daily Routine – the Guarantee of Health"

3. "Physical Activity Games and Exercises for Children"

4. "Conducting Effective Conversations with Parents on HL"

5. "Campaign Against Harmful Habits (Smoking, Naswar) – the Educator as a Role Model"

6. "Fairy Tales and Role-Playing Scenes about a Healthy Lifestyle"

Case study

80 min 1. "A Frequently Ill Child in Kindergarten – Causes and Solutions"

2. "An Educator's Neglect of Their Own Health – What Kind of Example for Children?"

3. "Consequences of Poor Nutrition: Obesity and Other Risks"

4. "Stress and Psychological Health – How Does an Educator Manage It?"

5. "Violating Sanitary-Hygiene Norms in PEOs – Consequences and Remedies"

Training

80 min 1. "Breathing Exercises and General Physical Workouts"

2. "Psychological Relaxation and Stress Management Techniques"

3. "Healthy Eating – Planning a Daily Diet"

4. "Daily Routine, Sleep, and Rest – Restoring Energy"

5. "Increasing Physical Activity – Daily Movement Norms"

Brainstorming

80 min 1. "What are the Most Effective Methods for Engaging Preschool Children in a Healthy Lifestyle?"

2. "Creating a Healthy Environment in PEOs – What Ideas and Practical Solutions?"

Project work

2

80 min 1. "My Healthy Group" – a project for organizing a healthy lifestyle in a group

2. "Health Festival" – a plan for organizing a large event in a PEO and its implementation

This table covers various aspects of a healthy lifestyle (nutrition, hygiene, physical activity, mental health, routine, harmful habits, pedagogical skills) and serves to comprehensively shape the HL competence of future educators.

Each interactive session had the following structure: introductory motivation (5–10 min) → main part (interactive work, 50–60 min) → reflection and conclusion (10–15 min). During

the sessions, students worked in small groups (4–5 people), with groups being rotated each time. The instructor acted as a facilitator, asking guiding questions, managing the discussion, and providing feedback.

In the control group, the same topics were covered in 20 lectures and discussions. The lectures were based on slides, textual materials, and oral presentations; students mainly participated as listeners, and only question-and-answer sessions and brief discussions were organized.

6. Methods of Statistical Data Analysis

The following statistical processing methods were applied to the quantitative data:

- Descriptive statistics: arithmetic mean (M), standard deviation (SD), minimum and maximum values.
- Between-group comparison: independent samples Student's t-test – to compare baseline and final indicators between the experimental and control groups.
- Within-group comparison: paired samples Student's t-test – to compare baseline and final indicators within each group.
- Effect size: Cohen's d coefficient was calculated (0.2 – small, 0.5 – medium, 0.8 – large effect).
- Statistical significance level: accepted as $p < 0.05$.
- Analyses were performed using SPSS 26.0 software.

Qualitative data (observation protocols, interviews, reflective diaries) were processed using the content analysis method, and key thematic directions were identified.

7. Ethical Considerations and Research Limitations

The following ethical principles were adhered to during the research:

- Written consent was obtained from all participants.
- Participants' personal data were kept confidential.
- Participants had the right to withdraw from the experiment at any time.
- Students in the control group were also introduced to interactive methods at the end of the experiment (principle of fairness).

The following can be noted as limitations of the study:

- The experiment was conducted at only three higher education institutions, which limits the generalizability of the results.
- The non-randomization of groups (working with existing groups) may affect internal validity.
- The duration of the study (6 months) does not allow for assessing the long-term stability of competencies (this could be addressed by subsequent follow-up studies).
- Participants' awareness of the experimental situation (Hawthorne effect) may have influenced some results.

Conclusion

This research was aimed at theoretically substantiating and experimentally verifying the effectiveness of interactive learning technologies in forming healthy lifestyle (HL)

competencies in future preschool educators, and the obtained results allowed the following main conclusions to be drawn:

1. Interactive learning technologies were proven to be significantly more effective than traditional methods in developing all structural components of HL competence (cognitive, activity-based, motivational). The results of the experimental trial demonstrated that in the experimental group (163 students) where interactive methods were applied, the growth of HL competence was higher than in the control group (162 students) across all indicators: 17.3% higher in the cognitive component, 0.9 points higher in the activity-based component, and 1.0 point higher in the motivational component. The substantial increase in the motivational component (1.4 points) particularly indicates the important role of interactive methods in strengthening students' internal need and personal interest in HL. This, in turn, constitutes the key factor ensuring the long-term stability of competence.

2. Interactive methods activate the activity-based and reflective mechanisms of HL competence formation. Role-playing games, case studies, training sessions, brainstorming, and the project method allowed students not only to theoretically master HL principles but also to "live through" them in real pedagogical situations, to try them out, and to draw conclusions. At the end of the experiment, 68% of students in the experimental group stated that after the interactive sessions they had decided to reconsider their lifestyle, increase physical activity, and change their eating habits (in the control group this figure was only 17%). This confirms the ability of interactive methods to elevate competence to the level of personal conviction and practical behavior.

3. The practical effectiveness of the interactive session program was established, along with broad possibilities for its application in pedagogical education practice. The 20 interactive sessions developed during the research (role-playing games, cases, training, brainstorming, projects) proved to be a convenient, systematic, and replicable model for forming HL competence in future educators. The methods rated by students as most effective were role-playing games (91%) and training (87%), demonstrating the superiority of methods that are practice-oriented, interactive, and based on personal experience.

4. The research also revealed the existence of certain organizational and methodological difficulties in applying interactive methods. Preparing interactive sessions requires more time, methodological skill, and a creative approach compared to a traditional lecture. Moreover, some students (especially those of an introverted nature) initially showed passivity in group work. However, creating a favorable psychological climate, skillfully performing the facilitator role by the instructor, and regularly rotating groups made it possible to overcome these challenges.

Practical Recommendations:

1. It is recommended to introduce into the curriculum a special module or elective course titled "Forming Health Competence through Interactive Methods" for students majoring in preschool education.

2. The developed session program, collection of case situations, role-play scenarios,

and training modules are recommended for use as a methodological guide in teaching HL-related subjects at pedagogical education institutions.

3. It is advisable to organize training sessions based on interactive methods for developing HL competence in professional development courses for educators at preschool educational organizations.

4. It is recommended to enhance the methodological preparedness of teachers in using interactive methods and to conduct seminar-training sessions to develop their facilitation skills.

Future Research Directions: The research results indicate the necessity of studying the long-term stability of HL competence, examining the effectiveness of applying interactive methods in distance and blended learning settings, and conducting comparative studies with students of different ages and course levels. Furthermore, applying interactive methods to the formation of other professional competencies (communicative, creative, organizational) is also a promising direction.

In summary, interactive learning technologies are an effective and scientifically grounded means of forming healthy lifestyle competencies in future preschool educators. They transform students from passive listeners into active participants, convert theoretical knowledge into practical skills and personal attitudes, and prepare them to promote and teach HL not only in their own lives but also in their future pedagogical activities. The methodological materials and practical recommendations developed in this research can be widely applied in the pedagogical education system and serve to further improve the professional preparation of preschool educators.

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