EFFECTIVENESS OF USING INNOVATIVE APPROACHES AND INTERACTIVE METHODS IN ENVIRONMENTAL EDUCATION

Saydaliyeva Nodira Kaxxarovna
Doctor of Agricultural Sciences (PhD), Senior Lecturer, Department of Ecology and Environmental Protection, Faculty of Natural Sciences, Fergana State University,
saydaliyevanodirakaxxarovna@gmail.com
Orcid ID: 0009-0000-5938-7527
Hakimova Fotima Mansurjon kizi
4th-year student in the field of Ecology and Environmental Protection
azimovaf792@gmail.com

Annotation: *This article analyzes the theoretical and practical aspects of using innovative approaches and interactive methods in the process of environmental education. In the modern education system, the formation of environmental culture, the enhancement of ecological awareness among the younger generation, and the development of responsible attitudes toward the environment are highlighted as urgent issues. The article reveals the significance of interactive methods such as "Brainstorming", "case study", "cluster", "BBB", "Insert", "Fishbone diagram", and "role-playing games" in improving the effectiveness of environmental education. In addition, the role of multimedia tools, digital platforms, environmental projects, environmental actions, and environmental trainings in the formation of students' ecological competencies is scientifically substantiated.*

Keywords: *environmental education, ecological culture, innovative approach, interactive methods, ecological awareness, pedagogical technologies, ecological competence, sustainable development, digital education, environmental upbringing.*

INTRODUCTIOdN

In recent years, systematic measures have been implemented in our country to ensure citizen participation in preventing and addressing environmental problems related to global development and climate change, as well as to conduct uncompromising efforts against environmental violations.

In our country, in order to ensure sustainable development and mitigate the impacts of climate change, the "Green Economy Transition Strategy" of the Republic of Uzbekistan for the period 2019–2030 was adopted. In this regard, the "Programme for Transition to a Green Economy and Ensuring Green Growth in the Republic of Uzbekistan until 2030" is being implemented to achieve the objectives defined in the strategy. Nevertheless, a number of challenges and shortcomings still remain in fostering a sense of respect for nature among citizens, enhancing the

ecological awareness and culture of the population, and improving the level of environmental literacy in society.

In particular, effective public oversight over the implementation of the right of everyone to a favorable environment and to reliable information about its condition enshrined in the revised Constitution and of great importance for enhancing environmental culture has not yet been fully established.

Efforts to enhance environmental culture among the population have not been organized in a systematic and continuous manner. There is a need to improve the continuous mechanism for raising environmental culture in society, within families, neighborhoods, educational institutions, and government bodies; however, a comprehensive approach has not been sufficiently applied in this regard, and adequate measures are not being taken to ensure the implementation of requirements related to the compulsory nature of environmental education.

In society, the targeting of environmental awareness-raising activities has not been sufficiently ensured, effective cooperation between state authorities and civil society institutions in their organization has not been established, and innovative methods of environmental promotion have not been adequately utilized.

LITERATURE REVIEW. The Decree of the President of the Republic of Uzbekistan on "Approval of the Concept for Enhancing Environmental Culture of the Population for the Period up to 2030" aims to ensure the implementation of the Presidential Decree PF–16 dated 30 January 2025 on the "State Programme for the Implementation of the 'Uzbekistan – 2030' Strategy in the Year of Environmental Protection and 'Green Economy'." It seeks to further increase the effectiveness of measures aimed at improving the environmental culture of the population, as well as to strengthen the joint efforts of state bodies in cooperation with citizens, non-governmental non-profit organizations, and other institutions of civil society in this direction, and to support initiatives of the Ecological Party of Uzbekistan aimed at increasing citizens' environmental knowledge.

The main objective envisaged in the adoption of this resolution is to achieve the following indicators by 2030:

(a) the formation of environmental culture among 3.3 million children in preschool education institutions;

(b) the strengthening of environmental education and upbringing, and the enhancement of environmental culture among 4.2 million students in general secondary education institutions;

(c) the strengthening of environmental education and upbringing, and the enhancement of environmental culture among 400,000 students in secondary specialized and vocational education institutions;

(d) the enhancement of environmental culture among 1.9 million students in higher education institutions;

(e) the improvement of environmental culture among 90 percent of employees of state bodies, enterprises, and institutions.[24]

In order to improve the environmental situation, it is possible to achieve the protection of the natural environment, the rational use of natural resources, and the restoration of degraded ecosystems by providing the population with environmental knowledge and thereby enhancing their ecological culture.

DISCUSSION AND RESULTS. Ecological culture is a system of skills and values that reflects people's careful attitude toward nature based on knowledge, awareness, understanding, literacy, and intellectual potential, as well as the ability to apply them in practice. It represents a high level of activity and responsibility toward the environment. It also means that the population treats nature with care, restores ancestral traditions, uses natural resources rationally, and strives to preserve a healthy and sustainable environmental condition for future generations.

In the formation of ecological culture among students, interactive methods, digital technologies, game-based technologies, and practical activities are considered effective tools. They transform theoretical knowledge into practical skills and foster a responsible attitude toward the environment. These approaches contribute to the development of ecological awareness and responsibility among students.

The term "interactive" originates from the English word "interact," which means "to act in cooperation." Interactivity refers to a mode of interaction in which a learner communicates and collaborates either with other learners or with a computer in a mutual engagement process.

When interactive methods are used, students develop skills such as critical thinking, analyzing information sources and situations, solving complex problem situations, evaluating peers' opinions and drawing well-founded conclusions, participating in discussions, and engaging in communication with other individuals.

The "Lotus Flower" is a creative thinking technique designed for systematic analysis of problems and generation of new ideas. The method helps to break down a central problem into smaller parts and find separate solutions for each component. (1-table)

[24] Decree of the President of the Republic of Uzbekistan, dated May 15, 2025, No. PQ-184.

"Brainstorming" enables students to apply previously acquired knowledge in new situations, thereby expanding and deepening their understanding and mastering mental activity techniques. These methods include creating problematic situations, developing chains of problem questions, designing problem tasks and conducting experiments, forming hypotheses for solving problem situations, proving hypotheses, comparing objects, logical reasoning, conducting research-based experiments, and formulating conclusions and generalizations.

"Case study" is an interactive teaching method based on the analysis of a specific real or artificially created problem situation. It teaches students to apply theoretical knowledge in practice, develop analytical thinking, work in teams, and find alternative solutions to problems.

"Cluster" is a combination or group of objects, enterprises, ideas, or elements that share common features, goals, or close interrelations. It is a method of visually representing ideas, thoughts, or concepts related to a specific topic in a structured graphical form, showing their interconnections.

1-table

Interactive methods and their importance in the educational process

№	Interactive method	Description	Importance in education	Developed skills
1	**Interactive learning**	A learning process based on cooperation between students or interaction with computers	Increases students' activity and collaboration in the learning process	Communication, cooperation, independent thinking
2	**Lotus blossom method**	A creative thinking technique that divides a problem into smaller parts and generates solutions	Helps analyze problems systematically	Creative and systematic thinking
3	**Brainstorming**	A method based on generating free ideas and opinions	Encourages innovative ideas and problem-solving	Critical and creative thinking
4	**Case study method**	Analysis of real or artificial situations and problems	Connects theoretical knowledge with practice	Analytical thinking and decision-making

5	**Cluster method**	A graphical organization of concepts and ideas around a topic	Helps systematize and understand information	Logical and associative thinking
6	**Fishbone method**	A graphical method for analyzing causes and effects of problems	Enables deep analysis of problems	Analytical and problem-solving skills
7	**"How?" method**	Learning through questions such as "Why?" and "How?"	Encourages deep understanding of topics	Analytical and critical thinking
8	**BBB Method**	A table-based strategy for organizing knowledge	Strengthens comprehension and learning outcomes	Independent learning and summarizing skills
9	**Problem situation method**	A method based on analyzing and solving problematic situations	Motivates students to research and explore solutions	Logical thinking and problem-solving
10	**INSERT method**	A reading strategy using symbols to analyze information	Develops text comprehension and information processing	Independent reading and analytical skills
11	**Role-playing games**	Simulation of real-life situations through assigned roles	Helps apply knowledge in practice	Communication, social and psychological skills
12	**Cinquain method**	A five-line structure used to summarize and express concepts	Helps identify and generalize the main idea	Speech development, creative and critical thinking

"Fishbone" method was developed by Japanese professor Kaoru Ishikawa. It is a graphical organizer aimed at analyzing the causes and effects of a particular problem or phenomenon. This method helps develop systematic thinking and analytical skills.

"How?" method (also referred to as the "Why?" or "How?" questioning method) is an active pedagogical approach used in the learning process to develop

students' critical thinking, analytical abilities, and deeper understanding of the topic. It is based on asking guiding questions such as "Why?", "How?", and "What will happen if...?" to encourage inquiry and exploration.

"KWL (BBB) method" (B-B-B scheme) is an interactive teaching strategy widely used in pedagogy to help students organize their knowledge about a topic. It structures learning into three stages: what students **Know**, what they **Want to know**, and what they have **Learned**.

The method works based on a table consisting of three columns:

K — "Know" (What do we already know about the topic?)

W — "Want to know" (What questions do we have about the topic?)

L — "Learned" (What have we learned at the end of the lesson?)

"Problem situation" method is a teaching approach based on analyzing problematic situations and finding their solutions. The difficulty level of the tasks used in this method should correspond to students' knowledge and abilities.

"Insert" method is an active learning strategy used to monitor understanding and systematize information while reading a text. Students use special symbols while working with the text to classify information, confirm prior knowledge, and identify unclear points. This method improves independent reading skills.

Insert symbols and their meanings:

"V" (I know): The information matches what I already know.

"+" (New): This is new information for me.

"-" (Contradiction): This contradicts what I knew before.

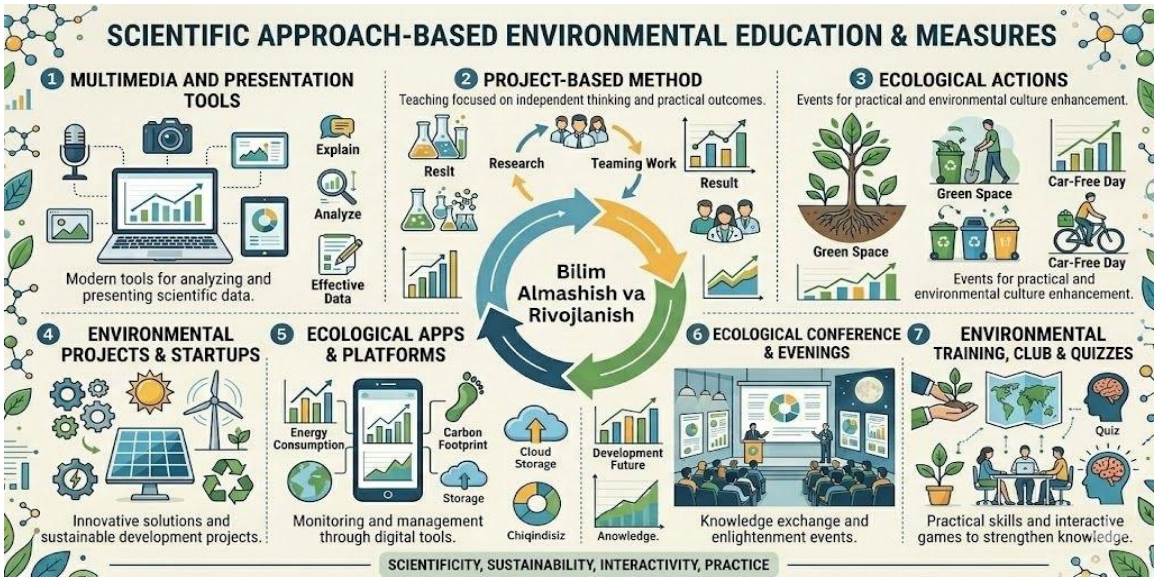
"?" (Unclear): I do not understand this or have questions about it.

"Role-playing games" are a type of activity in which participants take on specific character roles and act according to established rules. For example, in preschool education, role-playing games such as "shop" or "hospital" help develop children's social skills. They also support learners in developing communication skills, overcoming fears, and managing emotions. In the learning process, role-playing allows students to model real-life situations, making it easier to understand and absorb knowledge.

"Cinquain method" (from French meaning "five lines") is an educational technique that helps express complex concepts in a short and structured form. It develops critical thinking and speech skills by analyzing a text, identifying its main idea, and organizing it into a fixed structure (noun, adjectives, verbs, sentence, synonym). This method is widely used in subjects such as literature, history, philosophy, and even economics, making complex topics easier to understand.

"Multimedia tools" (multimedia – multi-modality) are a set of technical and software tools that enable a person to interact with a computer using natural forms of communication such as sound, video, graphics, text, animation, and others.

"Presentation" is the process of visually and effectively demonstrating, explaining, and delivering information, ideas, products, or projects to an audience. It uses various elements such as text, graphics, images, audio, and video through slides to enhance understanding and communication. (1-page)



1-page. Innovative approaches in environmental education

"Project-based learning method" (or project method) is a teaching approach based on learners' independent activity, aimed at achieving a specific practical or theoretical outcome (product). It develops students' skills in independent thinking, problem analysis, information search, and teamwork. Unlike traditional education, the teacher does not provide ready-made knowledge but guides the learning process.

"Ecological project" is a set of practical measures aimed at environmental protection, conservation of natural resources, reduction of pollution, and ensuring sustainable development. It includes areas such as renewable energy, waste recycling, water conservation, and biodiversity protection. Examples include "Green Space", "Green Technologies", and "Zero Waste Technologies".

"Ecological actions" are activities aimed at protecting the environment, using natural resources efficiently, and raising public ecological awareness.

Main ecological actions in Uzbekistan:

"Green Space": A nationwide initiative focused on planting millions of tree seedlings across the country.

"Protect Nature, Keep Cleanliness!": Mass clean-up and landscaping activities in different regions.

"Nature–Society–Human": A series of seminars, conferences, and interactive events aimed at increasing ecological awareness.

"Car-Free Day": An initiative encouraging people to give up private transport to protect air quality.

"Ecological conferences" are educational events that bring together specialists, scientists, teachers, and students to discuss environmental issues, sustainable development, and nature protection. They contribute to improving ecological culture, exchanging theoretical knowledge, introducing modern technologies, and shaping ecological awareness among young people.

"Ecological evenings" are educational and upbringing events aimed at protecting nature, discussing environmental problems, and increasing ecological culture. These events are organized to provide knowledge about living and non-living nature, plants, animals, and the role of humans in overcoming ecological challenges.

"Ecological startup" (eco-startup) is an innovative business project focused on environmental protection, waste reduction, improving energy efficiency, and the rational use of natural resources. It aims to develop a green economy and solve environmental problems through eco-friendly technologies.

"Ecological applications and platforms" are digital tools aimed at environmental protection, promoting a sustainable lifestyle, and increasing ecological awareness. They provide features such as waste sorting, energy consumption monitoring, carbon footprint calculation, and support for green initiatives, thereby contributing to the development of a green economy.

"Ecological training" is a practical learning process that teaches people about environmental protection, ecosystems, rational use of natural resources, and solving ecological problems. Its goal is to develop ecological culture, foster responsible attitudes toward the environment, and promote a sustainable way of life among participants.

"Ecological clubs" are voluntary organizations that unite young people, students, and activists to protect nature, increase ecological knowledge, and develop innovative solutions. They contribute to sustainable development through activities such as tree planting, waste sorting, and eco-education. In Uzbekistan, initiatives such as the "Eco Child" program in preschool and school education help foster love and respect for nature.

"Ecological quizzes" are interactive question-and-answer games or tests focused on nature, environmental protection, biodiversity, and ecological issues such as global warming and pollution. They help develop ecological awareness, encourage responsible attitudes toward nature, and strengthen knowledge about ecosystems, especially among young people.

CONCLUSION

The use of innovative approaches and interactive methods in environmental education plays a crucial role in developing students' ecological knowledge, skills, and competencies. Through interactive methods, digital technologies, environmental projects, campaigns, and training activities, a responsible attitude toward nature, ecological awareness, and ecological culture are formed in the younger generation.

Moreover, applying methods such as "brainstorming", "case study", "cluster", "KWL (BBB)", "Insert", and "role-playing games" in environmental education helps students develop independent thinking skills, analyze problem situations, and find practical solutions. This contributes to educating environmentally literate, socially active youth who follow the principles of sustainable development.

As a result, strengthening ecological culture increases the effectiveness of environmental protection, rational use of natural resources, and the development of the "green economy."

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