BG Pulse Journal USA
ISSN:1947-2536 http://www.bgpulseusa.com/index.php/bg
BG PULSE JOURNAL

DEVELOPING THE ECOLOGICAL CULTURE OF YOUTH IN NEW UZBEKISTAN THROUGH SPIRITUAL-EDUCATIONAL REFORMS AND CHEMISTRY EDUCATION

Nazarova Dilnoza Eraliyevna
National Pedagogical University of
Uzbekistan named after Nizami Ganjavi
Associate Professor, Department of History;
Doctor of Philosophy (PhD) in Historical Sciences
O‘tkirova Ro‘zaxon Baxtiyor qizi
1st-year Master’s student, Methodology of Teaching
Exact and Natural Sciences (Chemistry)
doi:https://doi.org/10.5281/zenodo.24144149

Abstract: This article analyzes the essence of spiritual and educational reforms in Uzbekistan, the formative potential of education, and the role of chemistry in shaping ecological culture. A three-stage didactic approach for chemistry lessons is proposed, integrating scientific knowledge, personal responsibility, and practical ecological action. The conditions for implementing this approach, as well as the criteria for evaluating its outcomes, are discussed.

Keywords: spiritual development, chemistry education, ecological culture, scientific integrity, sustainable development, practical project, youth upbringing.

Introduction

The progress of a society is not defined solely by economic indicators or technological innovations. The population’s level of knowledge, social responsibility, respect for the law, mutual trust, and cultural relations are also essential prerequisites for sustainable development. In this sense, spiritual development is not a narrow concept confined to an individual’s inner world; rather, it is a process that influences all spheres of social life.

Recent reforms in education, culture, and youth policy in Uzbekistan necessitate linking spiritual and educational initiatives with tangible, practical results. Resolution No. PQ-5040, dated March 26, 2021, establishes the task of ensuring the continuity of moral upbringing across the family, educational institutions, and the local community (mahalla) [1]. Decree No. PF-21, dated February 16, 2026, approved the updated version of the “Uzbekistan – 2030” Strategy for the 2026–2030 period [2]. This version strengthens the principles of measuring goals and performance indicators, as well as monitoring outcomes. Such an approach implies that the effectiveness of moral education within the schooling system should not be evaluated merely by the number of events held, but rather through students’ knowledge, the decisions they make, and their practical sense of responsibility.

The purpose of this article is to identify the key directions of reforms in the sphere of spirituality and enlightenment, to explain their significance within education and society, and to develop well-founded proposals for enhancing their effectiveness.

Relevance of the Topic and Research Methods

The issue of moral upbringing is frequently addressed only within the context of isolated discussions or specific events. In reality, however, a student demonstrates their attitude toward nature, their own health, and public property through the decisions they make in their daily life. Chemistry lessons can provide the scientific basis for such decisions: issues like drinking water quality, waste sorting, the safe use of household chemicals, and resource conservation link the subject matter to ethical responsibility. Therefore, it is essential to approach moral education not merely as a theoretical concept, but as a practical process integrated across various academic disciplines.

Resolution No. PQ-5040 of the President of the Republic of Uzbekistan, dated March 26, 2021, identifies the continuity of moral education across families, educational institutions, and local communities—as well as the organization of educational activities on a scientific basis—as a priority. Furthermore, the "Uzbekistan – 2030" Strategy, updated by Decree No. PF-21 dated February 16, 2026, reinforces an approach focused on goals, actions, and outcomes. These documents provide a rationale for evaluating the educational impact of chemistry lessons using observable criteria [1; 2]. This study employed methods including the analysis of regulatory and legal documents, the comparison of pedagogical content, and methodological modeling. No empirical experiment was conducted; the effectiveness of the proposed model remains to be tested in the future.

The Essence and Social Foundations of Spiritual Development

Limiting the concept of spirituality solely to the preservation of customs or the organization of educational events is a one-sided approach. Spirituality manifests itself in an individual's attitude toward knowledge, their integrity, their work ethic, their respect for the rights of others, and their active concern for social issues. Spiritual development, therefore, is the process by which these qualities evolve from individual traits into the everyday practices of society.

Its primary pillar is education. Beyond merely imparting knowledge, educational institutions foster the skills to distinguish facts from opinions, to discuss diverse viewpoints respectfully, and to make responsible decisions. A second pillar consists of upbringing within the family and intergenerational dialogue. A third pillar involves the collaboration of social institutions—such as the *mahalla* (local community), libraries, museums, theaters, and mass media. If these components operate in isolation from one another, their educational impact remains merely episodic.

There is no inherent conflict between preserving national values and acquiring modern knowledge. On the contrary, the scholarly study of historical heritage, the ability to express thoughts fluently in one's native language, and staying informed about global scientific and intellectual advancements serve to enrich one another. National self-awareness does not imply a closed-minded approach; rather, it entails respecting other cultures while remaining grounded in one's own.

In today's information environment, spiritual and moral education faces new challenges. Information spreads rapidly across social media, yet its reliability is not always verified. Therefore, it is not enough to simply warn young people about harmful content; they must be practically taught how to verify sources, recognize manipulation, protect personal data, and adhere to the etiquette of digital communication.

Consequently, the success of spiritual and moral development should be measured not merely by the number of meetings held, but by individuals' behavior, their pursuit of knowledge, their participation in public affairs, and their constructive approach to addressing problems.

Priority Areas of Reform

One of the key directions for reforms in the spiritual and educational sphere is the establishment of consistent cooperation between the state, educational institutions, and the public. Resolution No. PP-5040, dated March 26, 2021, outlines measures for the fundamental improvement of the system of spiritual and educational activities [1]. This document highlights the necessity of strengthening organizational responsibility within the sector, structuring educational and upbringing efforts on a scientific basis, and conducting systematic monitoring.

The first priority is to integrate spiritual and moral upbringing with the continuous education system. Across all stages—from preschool to higher education—educational objectives must be tailored to the specific age group. For instance, fostering cooperation and honesty in young children is most effective through play; for adolescents, through debate and discussion; and for university students, through social projects and research.

The second priority is to transform reading and the study of cultural heritage into a daily necessity. Achieving this requires more than just organizing reading competitions; it entails analyzing the works read, connecting the social and ethical issues presented therein to contemporary life, and expanding access to library collections. The habit of reading fosters independent thinking and expands one's vocabulary.

The third task is to support the initiatives of young people. When students—whether in higher education or schools—move beyond being mere listeners to prepared lectures and instead propose solutions to community problems, engage in volunteer work, or develop educational and scientific projects, spiritual values take on a practical dimension. Such activities strengthen teamwork, a sense of responsibility, and mutual trust.

The fourth area of focus is the development of digital culture. Media literacy training should include exercises such as identifying signs of misinformation, ensuring that images and statistics are not taken out of context, and verifying the authors of sources. As a result, young people transition from being passive recipients of information to active participants who analyze it.

Opportunities in Higher Education and Pedagogical Practice

The effectiveness of spiritual and educational initiatives depends, first and foremost, on how well they are integrated into the daily learning process. Ideas presented only during holidays or dedicated "character education" sessions may fail to yield the expected results if they are not reinforced through the regular academic experience. Therefore, it is essential to discuss the ethical and social issues relevant to the subject matter being taught. For instance, in the teaching of

chemistry, topics such as environmental responsibility, laboratory safety, scientific integrity, and the rational use of resources can be naturally integrated. When students undertake small-scale projects—such as sorting waste, monitoring water quality, or learning the safe use of household chemical products—theoretical knowledge is combined with socially beneficial practice. This elevates moral education from the level of mere slogans to that of concrete, real-world behavior. The necessity of embedding issues of sustainable development into the content of chemistry education is also well-supported in international academic literature [5; 7].

The personal example set by the educator is also of critical importance. A teacher's fair assessment practices, respectful engagement with students' opinions, proper citation of scientific sources, and willingness to admit their own mistakes serve as practical demonstrations of moral values. Consequently, it is advisable to focus on communication ethics, academic integrity, and skills for the constructive resolution of conflicts within professional development programs for educators.

A fresh approach is also required when evaluating educational and character-building activities. Simply counting the number of events held or listing the participants in a report reflects the process, but it fails to fully capture the actual outcomes. To determine effectiveness, one can analyze a combination of anonymous surveys, reflective journals, student projects, and the instructor's observations. The criteria should focus on fostering independent thinking and responsible behavior, rather than attempting to force an individual's worldview into a single, predetermined mold.

Open dialogues organized through the collaboration of families, local communities (*mahallas*), and universities can also be highly effective. When these sessions are structured as discussions centered on specific problems and solutions—rather than as one-sided lectures—they tend to increase the active engagement of young people. In particular, topics such as ecological awareness, cybersecurity, and professional ethics can serve to bring together representatives from different generations.

Discussion and Practical Proposals

Analysis indicates that the primary prerequisite for reform in the sphere of spiritual and educational development is a shift from a focus on mere event-holding to a focus on results-oriented activity. Three principles are essential to this process: continuity, participation, and transparency in evaluation. Continuity implies linking educational and developmental activities with the formal curriculum and the everyday environment; participation refers to the independent initiative of young people; and transparency entails an open, evidence-based analysis of outcomes.

In practical terms, it would be beneficial for higher education institutions to implement one socially significant student project each semester, documenting both its initial objectives and final outcomes. Initiatives such as "Responsible Consumption," "Academic Integrity Week," or "Environmental Literacy in the Neighborhood" could, for instance, strengthen interdisciplinary collaboration. The success of such a project should be measured not merely by the number of participants, but by the tangible output produced, the feedback received, and the sustainability of the initiative.

Furthermore, it is proposed that short, practical modules on media literacy be integrated into various academic courses, that discussion clubs be established within libraries, and that seminars on academic ethics be conducted for faculty members. Rather than relying on large-scale initiatives that require significant additional funding, these measures focus on the effective utilization of existing educational resources.

Proposed approach: A three-stage moral-ecological framework

The approach proposed in this article consists of three interconnected stages. The first stage, "Knowledge," involves students learning about the properties of substances, their circulation within the environment, and the chemical consequences of human activity, supported by reliable evidence. The second stage, "Analysis," requires students to examine local or everyday environmental situations, comparing potential harms with alternative solutions. The third stage, "Responsible Action," involves students carrying out a small-scale, safe, and measurable practical task, followed by a justification of the results. In this sequence, moral education is not imposed upon the subject matter from the outside; rather, it emerges naturally from the content of the discipline itself. This approach is grounded in the concept of linking chemical knowledge with socially and ecologically responsible decision-making [8].

For instance, when studying the topic "Water and Solutions," students might discuss the importance of drinking water, the effects of dissolved substances, and sources of water pollution. Subsequently, they could create a one-week observation log to track water conservation efforts at home. In the unit on “Polymers,” the benefits of plastics are weighed against the problems caused by plastic waste; students identify items that can be reused. In the unit on “Acids and Alkalis,” students develop skills in reading labels on household cleaning products, understanding the importance of not mixing them, and ensuring their safe storage. It is explicitly instructed that students must not touch or taste unknown substances, nor should they conduct experiments with hazardous reagents at home. Methodologies for chemistry lessons that focus on evaluating the ecological and social impacts of polymers have also been discussed in previous research [6].

The educational value of this approach lies in how it connects the general principle that “nature must be protected” with concrete evidence and practical choices. For instance, students come to understand that disposing of waste in designated areas is not merely a matter of discipline, but a conscious action aimed at reducing soil and water pollution. In group assignments, practices such as showing mutual respect, distributing tasks fairly, and recording measurement results accurately—without alteration—serve as key expressions of scientific integrity and ethical conduct.

Implementation and Evaluation Criteria

To apply this approach, one can select at least one situational task with an ecological focus from each chapter. At the beginning of the lesson, the teacher presents a problem; during the main part, they explain the relevant chemical concepts; and finally, they ask students to propose a solution based on evidence and to reflect on their personal responsibility. These tasks should be adapted to the students' age, the laboratory environment, and the curriculum.

It is recommended not to rely solely on students' verbal responses to assess outcomes. Three criteria are proposed: (1) scientific grounding — the correct application of chemical concepts; (2)

ecological decision-making — evaluating the consequences of a problem and selecting an appropriate solution; and (3) practical responsibility — adhering to safety protocols, accurately recording observations, and analyzing one's own actions. Comparing the initial and final states for each criterion is a useful method for pedagogical observation. However, as no classroom experiments were conducted for this article, no statistical conclusions regarding the effectiveness of the approach are provided. To test this proposal in the future, one could organize lessons for two groups studying the same topic, administer short situational questions before and after the instruction, and analyze student work along with observation records. Through this approach, changes in knowledge and progress in making responsible decisions can be specifically evaluated. When interpreting the results, it is essential to account for the groups' initial level of preparation and the specific conditions under which the instruction took place.

Conclusions and Recommendations

The practical outcome of reforms in the spiritual and educational sphere is demonstrated not merely by young people speaking about values, but by their ability to make well-founded and responsible choices in their daily lives. Chemistry education offers a significant opportunity in this regard: it links a careful attitude toward nature with scientific cause-and-effect reasoning. The proposed "Knowledge — Analysis — Responsible Action" framework is a methodological approach designed to strengthen the connection between subject content and educational objectives. It is advisable to initially pilot this approach within the scope of specific, smaller topics, refine the evaluation criteria, and verify the findings through further research.

References

1. O‘zbekiston Respublikasi Prezidentining 2021-yil 26-martdagi PQ-5040-son qarori. “Ma’naviy-ma’rifiy ishlar tizimini tubdan takomillashtirish chora-tadbirlari to‘g‘risida”. https://lex.uz/acts/-5344692
2. O‘zbekiston Respublikasi Prezidentining 2026-yil 16-fevraldagi PF-21-son farmoni. “Mamlakat taraqqiyotining 2030-yilgacha mo‘ljallangan ustuvor yo‘nalishlari doirasida islohotlarni izchil davom ettirish va yangi bosqichga olib chiqishning qo‘shimcha chora-tadbirlari to‘g‘risida”. https://lex.uz/acts/-8050769
3. UNESCO. Education for Sustainable Development: A Roadmap. Paris: UNESCO, 2020.
4. UNESCO. Education for Sustainable Development Goals: Learning Objectives. Paris: UNESCO, 2017.
5. Burmeister M., Rauch F., Eilks I. Education for Sustainable Development (ESD) and chemistry education. Chemistry Education Research and Practice. 2012;13:59–68. DOI: 10.1039/C1RP90060A.
6. Burmeister M., Eilks I. An example of learning about plastics and their evaluation as a contribution to Education for Sustainable Development in secondary school chemistry teaching. Chemistry Education Research and Practice. 2012;13:93–102. DOI: 10.1039/C1RP90067F.

7. Burmeister M., Eilks I. Using Participatory Action Research to Develop a Course Module on Education for Sustainable Development in Pre-Service Chemistry Teacher Education. Center for Educational Policy Studies Journal. 2013;3(1):59–78. DOI: 10.26529/cepsj.251.
8. Sjöström J., Talanquer V. Eco-reflexive chemical thinking and action. Current Opinion in Green and Sustainable Chemistry. 2018;13:16–20. DOI: 10.1016/j.cogsc.2018.02.012.