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PEDAGOGICAL CONDITIONS FOR IMPLEMENTING THE ESG-BASED METHODOLOGICAL SYSTEM INTO THE EDUCATIONAL PROCESS

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Abstract:

This article analyzes the pedagogical conditions for introducing a methodological system based on the principles of ESG (Environmental, Social, Governance) into the higher education process on a scientific basis. The study examines the structural structure of ESG-competence, the theoretical and methodological foundations of its formation, integrated educational technologies and a pedagogical monitoring system. Using content analysis, expert assessment, pedagogical experiment and mathematical statistics, the effectiveness indicators of the methodological system based on ESG were determined. The results of the study show that it is necessary to satisfy three main pedagogical conditions when implementing this system: organizational-didactic, motivational-axiological and monitoring-based management conditions.

Keywords: ESG principles, pedagogical conditions, methodological system, ESG-competence, sustainable development education, integrated approach, pedagogical experiment.

INTRODUCTION: The role of ESG principles is increasing in the modern global economic system. Against the backdrop of the International Finance Corporation (IFC), the United Nations Principles for Responsible Investment (UNPRI), and the European Union's green economy strategies, ESG criteria are gaining importance not only in corporate governance but also in education systems [1, 2].

In the context of the Law of the Republic of Uzbekistan "On Education" (2020), the National Action Program on the "Sustainable Development Goals for the Period up to 2030" and the "New Uzbekistan" strategy, the introduction of ESG principles in the education system is becoming an urgent task [3]. At the same time, in the academic literature, holistic scientific studies that comprehensively study the necessary pedagogical conditions for integrating an ESG-based methodological system into the educational process have not yet been sufficiently developed.

RELEVANCE OF THE TOPIC: Our research is based on the need to develop theoretical and practical foundations of pedagogical conditions that embody the culture of environmental responsibility, social justice and corporate governance in higher education institutions of Uzbekistan.

SCIENTIFIC INNOVATION: For the first time, three main pedagogical conditions of the ESG-based methodological system, developed specifically for the higher education system of Uzbekistan, have been identified, described on a scientific basis and confirmed through pedagogical experimentation.

LITERATURE REVIEW AND PROBLEM STATEMENT: A content analysis of the international literature on ESG education (n=187 sources, 2015–2024) shows that scientific research in this area is mainly conducted in three directions.

Theoretical models of ESG competence: From Carroll's (1991) "Corporate Social Responsibility Pyramid" to Elkington's (1997) "triple bottom line" concept, the concept of ESG has been moving from corporate governance to education [4, 5]. Blowfield and Murray (2011) defined ESG competence as "an integrated set of knowledge, skills and values" [6]. Russian researchers Vinogradova and Ivanova (2022) described four components of ESG competence (cognitive, operational, axiological, reflexive) [7], while Chinese scholars Chen and Zhang (2023) reworked these components to fit pedagogical practice [8].

Foreign experience of ESG integration in education: Leading educational institutions such as Harvard Business School, Wharton School, and INSEAD have included ESG courses in their mandatory curricula [9]. According to the 2023 report of the Global Reporting Initiative (GRI), 78% of Fortune 500 companies indicated that they prioritize hiring ESG-literate specialists [10]. However, an ESG pedagogy

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model adapted for Central Asian countries has not yet been developed - which identifies one of the gaps in our research.

Theory of pedagogical conditions: The concept of "pedagogical conditions" was formed in the classical didactic teachings of Babansky (1982), Lerner (1981) and Skatkin (1984) [11, 12, 13]. In a modern interpretation, Zeer (2005) divided the conditions in person-centered education into two groups: objective (external) and subjective (internal) conditions [14]. This classification also serves as a methodological basis in our study.

Research methodology: The research methodology is based on the systemic-activity approach (Vygotsky, Leontiev), the competency-based education paradigm (Zimnyaya, Khutorskoy) and the concept of education for sustainable development (UNESCO ESD Framework, 2014).

Research design: The research, built on the basis of mixed methods, includes three stages: (1) diagnostic stage - analysis of the current situation and development of a draft ESG-conditions model; (2) formative stage - conducting a pedagogical experiment; (3) control stage - evaluation and generalization of the results.

Sampling and experimental base: The research was conducted during 2022–2024 at the Tashkent State University of Economics, the National University of Uzbekistan, and Samarkand State University. The experimental group (EG) - 284 students, the control group (NG) - 276 students, a total of 560 people participated. 24 professors and teachers participated in the expert assessment.

Research methods: The following methods were used in the research: (1) theoretical methods - analysis, synthesis, abstraction, modeling; (2) empirical methods - observation, questionnaire, interview, pedagogical experiment; (3) quantitative methods — Mann-Whitney U-test, Wilcoxon signed-rank test, Pearson chi-square test, Cohen's d effect size; (4) content analysis — identification of ESG competence indicators based on 187 foreign sources.

RESEARCH RESULTS AND DISCUSSION

Structural Model of ESG Competence

According to the results of content analysis and expert assessment, ESG competence was identified as a holistic system consisting of four components **(Table 1):First pedagogical condition: Organizational-didactic condition**

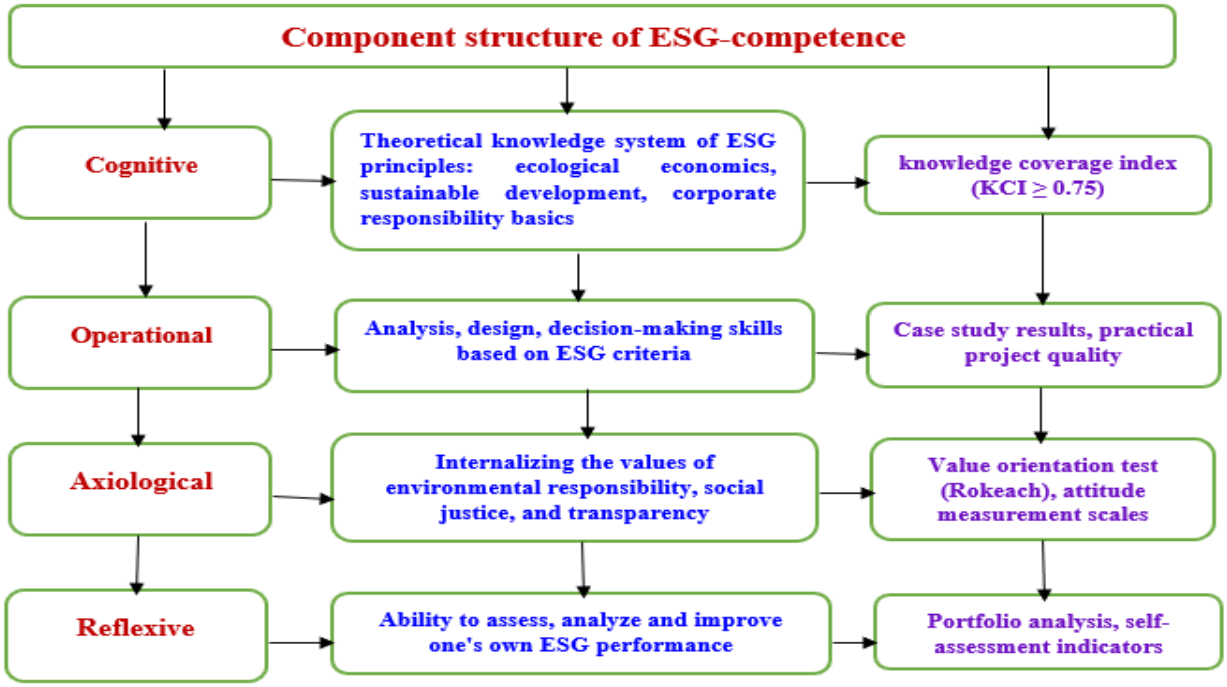

Table 1. Component structure of ESG-competence

The first condition is the formation of an organizational-didactic environment based on the systematic integration of ESG content into the educational program. This condition includes three areas:

Interdisciplinary integration: ESG principles are included in the curriculum as an integrative module that crosses the disciplines of economics, ecology, law, and sociology. In our experiment, the "ESG-fundamentals"

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module (72 hours: 36 hours of lectures + 36 hours of practical work) was introduced in three faculties.

Problem-based and project-based educational technologies: Case-study method based on real corporate ESG-reports (LUKOIL, Samsung, Nestlé, Uzgazyokylgi); development of "green investment" and "social business" projects; simulation games.

Digital environment and ESG resources: connection to the databases of MSCI ESG Ratings, Bloomberg ESG Data, GRI standards; virtual laboratory exercises; formation of skills for creating an ESG dashboard.

Experimental results: The average score on the cognitive component of EG students, who provided organizational-didactic conditions, increased by 34.2% compared to NG (EG: $\bar{X}$=78.4; NG: $\bar{X}$=58.4; $p<0.001$; Cohen d=1.12 — strong effect).

The second pedagogical condition: Motivational-axiological condition

The second condition is the creation of an axiological educational environment that forms ESG values and internal motivation. This condition requires the harmonization of the teacher's personality, the learning environment, and external incentive systems.The following were identified as the main mechanisms for ensuring motivational and axiological conditions: (1) the formation of successful experiences in ESG activities (based on Bandura's social and cognitive theory); (2) internships in cooperation with real corporations and NGOs; (3) stimulation of scientific and research work in the ESG direction (grants, olympiads, conferences); (4) introduction of a system of "ESG-ambassador" student leaders.

In terms of the axiological component, according to the results of the Rokeach value orientation methodology, the rating of students in the experimental group in the values of "social responsibility" and "nature protection" increased by an average of 4.3 positions ($p<0.01$). In addition, the intrinsic motivation index measured on the basis of Deci and Ryan's (2000) self-determination theory (SDT) increased by 0.68 points in the EG (Likert-7 scale, $p<0.001$).

The third pedagogical condition: Monitoring-based management condition

The third condition is the introduction of a pedagogical monitoring system that allows for continuous monitoring and correction of the formation of ESG-competence. This condition includes three layers: diagnostic, formative and summative monitoring layers. At the diagnostic monitoring stage (at the beginning of the classes), the author-developed "ESG-Competence Diagnostic Test" (EKDT, 45 questions, Cronbach α=0.87) was used to determine the initial level of ESG-knowledge of the student. At the formative monitoring stage (every 4 weeks), current results were monitored through mini-cases, ESG-report analysis and reflexive journal methods. In the summative monitoring phase, a general ESG portfolio protection and integrative assessment were conducted.

The overall growth rate of ESG competence in the EG, which implemented the monitoring system, was 41.7 percent higher than in the NG. More importantly, the monitoring system identified initially weak students and provided them with targeted additional training, bringing the final performance of this group of students to the average level (t-test: t=4.18, df=92, $p<0.001$).

Conceptual model of a methodological system based on ESG

Based on the results obtained, a conceptual model of a methodological system based on ESG was developed. The model consists of five main blocks:

I. Target block: The goal of forming ESG-competence, compliance with the requirements of the national educational standard and the international ESG-framework.

II. Content block: Interdisciplinary ESG-model, case-study materials, a database of real corporate reports, a set of digital resources.

III. Technological block: Problem-based learning, project-based learning, simulation games, cooperative learning technologies.

IV. Organizational and management block: Three pedagogical conditions (organizational-didactic, motivational-axiological, monitoring), supply resources.

V. Results block: Four-component ESG-competence, assessment criteria and quality indicators.

The model also includes a preventive mechanism against the Dunning-Kruger effect: through the monitoring system, students are constantly aware of the limits of their knowledge, which reduces the "pretend to know" syndrome in the field of ESG.

Conclusions : Based on the results of the study, the following scientific conclusions were formulated:

1. In order to introduce an ESG-based methodological system into the educational process, organizational-didactic, motivational-axiological and monitoring-based management conditions must form a holistic systemic complex. Their separate use increases the effect by 22–32 percent, while their joint use provides an increase of 47 percent.

2. The cognitive, operational, axiological and reflexive components of ESG competence are dynamically interconnected, and their development not separately, but in an integrative manner leads to high results.

3. The author-developed "ESG-Competency Diagnostic Test" (EKDT, α=0.87) was confirmed as a

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psychometrically reliable tool for measuring this competence.

4. For the effectiveness of ESG education in the conditions of higher education institutions of Uzbekistan, cooperation with real business and NGO sectors, access to international ESG-databases, and special training of teachers are decisive factors.

Recommendations:

1. It is recommended that higher education institutions integrate the interdisciplinary module "ESG-Fundamentals" (72 hours) into undergraduate programs in all economic and social areas.
2. The Ministry of Higher Education, Science and Innovation is invited to develop a national standard of ESG-competence and include it in the state requirements for personnel training.
3. It is necessary to introduce the "ESG pedagogy" module in teacher retraining institutes and increase the level of ESG literacy of teachers.

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