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TA'LIM TASHKILOTLARIDA KOMMUNIKATIV VA KOLLABORATIV MEKANIZMLAR ASOSIDA SAMARALI BOSHQARUVNI TASHKIL ETISH

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Annotatsiya

Mazkur maqolada umumiy o'rta ta'lim muassasalarida innovatsion boshqaruvni rivojlantirishda kommunikatsiya va hamkorlik mexanizmlarining o'rni ilmiy-metodik jihatdan kompleks tahlil qilingan. Tadqiqotda EMIS, LMS va eMaktab kabi zamonaviy raqamli boshqaruv tizimlari bilan bir qatorda SWOT, PEST, Balanced Scorecard (BSC) va KPI kabi strategik boshqaruv metodologiyalari o'rganilgan. Monitoring va baholash mexanizmlari, Professional Learning Community (PLC) modeli, taqsimlangan liderlik yondashuvlari hamda raqamli transformatsiya jarayonlari yagona integrallashgan tizim doirasida tahlil qilingan. Tadqiqot natijalari mazkur vositalarning boshqaruv samaradorligi va ta'lim sifatini oshirishga sezilarli hissa qo'shishini ko'rsatadi. Innovatsion boshqaruvda kommunikativ, ijtimoiy va texnologik omillarning ahamiyati nazariy tahlil hamda empirik ma'lumotlar asosida asoslab berilgan.

Kalit so'zlar: innovatsion boshqaruv, raqamli ta'lim tizimlari, EMIS, LMS, eMaktab, SWOT tahlili, PEST tahlili, Balanced Scorecard, KPI, taqsimlangan liderlik, hamkorlik, kommunikatsiya, ta'lim sifati, Professional Learning Community, raqamli transformatsiya.

ОРГАНИЗАЦИЯ ЭФФЕКТИВНОГО УПРАВЛЕНИЯ В ОБРАЗОВАТЕЛЬНЫХ ОРГАНИЗАЦИЯХ НА ОСНОВЕ КОММУНИКАТИВНЫХ И КОЛЛАБОРАТИВНЫХ МЕХАНИЗМОВ

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Аннотация

В данной статье представлен комплексный научно-методический анализ роли коммуникации и инструментов сотрудничества в развитии инновационного управления в учреждениях общего среднего образования. В исследовании рассматриваются современные цифровые системы управления — EMIS, LMS и eMaktab, а также методологии стратегического управления, включая SWOT-анализ, PEST-анализ, Balanced Scorecard (BSC) и KPI. В единой интегрированной системе исследованы механизмы мониторинга и оценки, модель Professional Learning Community (PLC), подходы распределённого лидерства и процессы цифровой трансформации. Результаты показывают, что данные инструменты существенно способствуют повышению эффективности управления и качества образования. Значимость коммуникативных, социальных и технологических факторов в инновационном управлении обоснована на основе теоретического анализа и эмпирических данных.

Ключевые слова: инновационное управление, цифровые образовательные системы, EMIS, LMS, eMaktab, SWOT-анализ, PEST-анализ, Balanced Scorecard, KPI, распределённое лидерство, сотрудничество, коммуникация, качество образования, Professional Learning Community, цифровая трансформация.

ESTABLISHING EFFECTIVE MANAGEMENT IN EDUCATIONAL ORGANIZATIONS BASED ON COMMUNICATIVE AND COLLABORATIVE MECHANISMS

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Abstract

This article provides a comprehensive scientific-methodological analysis of the role of communication and collaboration tools in developing innovative management in general secondary education institutions. The study examines modern digital management systems — EMIS, LMS, and eMaktab — alongside strategic management methodologies including SWOT, PEST, Balanced Scorecard (BSC), and KPI. Monitoring and

evaluation mechanisms, the Professional Learning Community (PLC) model, distributed leadership approaches, and digital transformation processes are investigated within an integrated framework. The findings demonstrate that these instruments contribute significantly to enhancing management efficiency and educational quality. The importance of communicative, social, and technological factors in innovative management is substantiated through empirical evidence and theoretical analysis.

Keywords: innovative management, digital education systems, EMIS, LMS, eMaktab, SWOT analysis, PEST analysis, Balanced Scorecard, KPI, distributed leadership, collaboration, communication, quality of education, Professional Learning Community, digital transformation.

The education system is currently undergoing profound transformations driven by globalization, digitalization, and the accelerating shift toward a knowledge-based economy. The emergence of knowledge-driven economies worldwide is placing new demands on educational institutions: they must evolve from mere knowledge-delivery centers into hubs of innovation and sustainable development.

In this context, the traditional approaches to managing educational organizations are rapidly giving way to data-driven, innovative, and adaptive management models. This shift is not coincidental — it is propelled by technological advancement, the strengthening of digital infrastructure, and society's growing expectations regarding educational quality. Management paradigms that once served well in stable environments are proving insufficient in today's dynamic landscape.

Communication and collaboration tools have emerged as among the most critical determinants of management effectiveness. They foster openness, transparency, and collective participation in governance processes. According to UNESCO (2021), 78 percent of high-performing educational institutions have implemented effective communication systems, and these institutions demonstrate a measurable advantage in student learning outcomes.

Digital platforms are creating favorable conditions for information exchange, rapid communication, collective decision-making, and the continuous professional development of educators. In the Republic of Uzbekistan, the national strategy for developing the education system through 2030 has designated the digitalization of educational institutions and the introduction of innovative management models as priority objectives.

The relevance of this research lies in the fact that the current management practices of general secondary schools in Uzbekistan have not yet been sufficiently studied or systematized with respect to the use of digital tools and communicative mechanisms. Accordingly, the scientific investigation of the role and impact of communicative and collaborative mechanisms in ensuring effective management of educational institutions carries significant practical and theoretical importance.

Research objective: to conduct a scientific analysis of the mechanisms through which communicative and collaborative tools can enhance innovative management effectiveness in educational institutions, and to formulate evidence-based practical recommendations.

Research objectives:

- to analyze the digital management systems currently implemented in educational institutions and evaluate their effectiveness;
- to determine the role of strategic management instruments in innovative governance;
- to examine the impact of monitoring and evaluation mechanisms on educational quality;
- to develop a model for integrating communication and collaboration mechanisms into management processes;
- to formulate scientifically grounded recommendations for effective innovative management.

Scientific novelty: for the first time, digital management, strategic instruments, monitoring-evaluation mechanisms, and communication tools in educational institutions have been comprehensively analyzed as a single integrated system, and an innovative management model has been proposed.

LITERATURE REVIEW

Scientific inquiry into the innovative management of educational institutions has expanded dramatically over the past decade. The research of Hallinger and Heck (2010) provided empirical evidence of a direct

relationship between management quality and educational outcomes. Their meta-analyses indicate that school leadership practices can influence student achievement levels by as much as 25 percent.

With regard to digital management systems, the UNESCO (2022) report states that countries that have fully implemented EMIS systems achieved an average improvement of 34 percent in the efficiency of educational resource allocation. Bates (2019) demonstrated that the integration of LMS systems into pedagogical processes constitutes a significant factor in developing students' capacity for independent learning.

In the domain of strategic management methodology, the Balanced Scorecard system developed by Kaplan and Norton (1996) has been tested in numerous studies adapted to educational settings. Wheelen and Hunger (2012) developed a methodology for applying SWOT and PEST analyses in education, while Parmenter (2015) conducted a comprehensive study on refining KPI indicator systems for educational institutions.

The Professional Learning Community (PLC) concept was elaborated in detail by DuFour, Eaker, and Many (2010). Their research found that teacher professional satisfaction increased by 41 percent in schools that adopted the PLC model. Hargreaves and Fullan (2012) studied the impact of collaborative professional capital on educational quality and demonstrated that teacher-to-teacher professional collaboration is more effective than individual professional development in improving learning outcomes.

The theory of distributed leadership was analyzed in depth by Spillane (2006), who provided a theoretical foundation for the idea of distributing leadership functions across all members of the educational community rather than concentrating responsibility with a single administrator. In the Uzbekistan context, the studies of Yusupov (2021) and Rakhimov (2022) examined management challenges in local educational institutions and underscored the importance of institutional support in implementing digital tools.

However, in the existing body of research, digital management, strategic instruments, monitoring-evaluation, and communication mechanisms have typically been studied in isolation. The present study aims to address this gap by examining these components as a single integrated system.

3. RESEARCH METHODOLOGY

The study employed the following scientific research methods:

3.1. Theoretical Methods

- Systematic literature review of scientific sources and academic publications;
- Comparative analysis — benchmarking international and national practices;
- Systems approach — examining management components as an integrated whole;
- Inductive and deductive reasoning methods.

3.2. Empirical Methods

– Survey questionnaire (N=124 school principals and teachers, Tashkent city and regions, 2023–2024 academic year);

- Observation — direct observation of management processes in educational institutions;
- Expert assessment — structured interviews with 12 specialists in educational management;
- Document analysis — statistical data and reports from educational institutions.

3.3. Statistical Analysis

Data were processed using SPSS 26.0 software. Correlation analysis, factor analysis, and regression modeling were applied. The significance level was set at $p < 0.05$.

Table 1. Sample Composition of the Study

Category	Number	Percentage	Region
School Principal	38	30.6%	Tashkent city and Tashkent region
Deputy Principal for Academic Affairs	42	33.9%	Samarkand, Fergana regions
Teacher (5+ years of experience)	44	35.5%	Kashkadarya, Bukhara regions

Total	124	100%	Republic of Uzbekistan
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4. MAIN FINDINGS

4.1. Digital Management Systems: Integration and Effectiveness

Digital management tools occupy a central place in the effective organization of innovative governance in educational institutions. These tools integrate all management processes into a unified information environment, thereby serving to enhance overall management effectiveness. Such systems include EMIS (Education Management Information Systems), electronic gradebook and diary platforms, and LMS (Learning Management Systems).

The mutual integration of these systems enables the centralization of management data and creates conditions for evidence-based strategic decision-making. Through EMIS, comprehensive data are generated regarding student enrollment, teacher qualifications, material resources, academic workloads, and financial indicators. This serves as a critical analytical foundation for strategic planning and the rational allocation of resources by school leadership [1].

Survey results indicate that 67 percent of school principals using EMIS reported that decision-making speed had doubled, while 54 percent noted improvements in resource allocation efficiency. These figures confirm the practical utility of digital systems anticipated in the academic literature.

Electronic gradebook and diary systems ensure the operational monitoring of the educational process. In particular, the eMaktab platform enables real-time tracking of student attendance, grades, and academic performance dynamics. As a result, communication effectiveness among teachers, students, and parents is enhanced [2]. According to the research data, schools that actively use the eMaktab platform recorded a 43 percent increase in parental engagement with the educational process.

LMS platforms facilitate the organization of the learning process in accordance with contemporary pedagogical approaches. These systems enable the digital delivery of instructional materials, automated assessment of assignments, and the effective implementation of distance learning. They are particularly valuable as tools for introducing blended learning and flipped classroom methodologies [3].

An additional advantage of digital management tools is the ability to conduct real-time monitoring through dashboard and learning analytics technologies. This allows for the regular analysis of educational quality indicators and creates opportunities for the early identification of potential problems. For example, the ability to detect a deteriorating academic performance trend at an early stage and provide targeted support fundamentally improves the effectiveness of the pedagogical process.

However, the effective operation of these systems requires the development of digital competencies among teaching and administrative staff, the strengthening of technical infrastructure, and the ensuring of information security. The survey revealed that 61 percent of respondents reported difficulties in mastering digital systems, confirming the urgency of the personnel training challenge.

Table 2. Comparative Analysis of Digital Management Systems

System	Primary Function	Utilization Rate	Effectiveness Indicator
EMIS	Database management	78%	High (+34%)
eMaktab	Student monitoring	89%	Very high (+43%)
LMS	Online learning management	54%	Moderate (+22%)
Google Workspace	Communication and documents	71%	High (+38%)
Microsoft Teams	Virtual meetings and collaboration	46%	Moderate (+19%)

4.2. Strategic Management Instruments

Strategic management instruments constitute one of the key components of innovative governance. SWOT analysis, PEST analysis, Balanced Scorecard (BSC), and KPI systems serve as essential tools for assessing the internal and external environment of an educational institution and defining its development prospects.

SWOT analysis enables the identification of an institution's strengths, weaknesses, opportunities, and threats. On this basis, strategic decisions are developed, and priority directions for development are established. Of the principals surveyed, 72 percent reported applying SWOT analysis regularly; however, only 29 percent had fully integrated it into their annual planning process.

PEST analysis enables a comprehensive examination of an educational institution's external environment by studying political, economic, social, and technological factors. This approach facilitates the alignment of education policy, digital transformation processes, and societal needs with strategic planning objectives. PEST analysis is particularly valuable as a foundation for adapting school programs to local economic and demographic changes.

The Balanced Scorecard system enables the translation of strategy into a concrete system of indicators. This model evaluates financial outcomes, the effectiveness of internal processes, stakeholder satisfaction, and development prospects in an integrated manner [4]. In a BSC model adapted for education, traditional financial indicators are replaced by measures of learning outcomes, pedagogical quality, and collective professional development.

The KPI system provides a means of measuring the performance of management activities against precise indicators [5]. Teacher performance, student results, and the efficiency of management processes are evaluated through this system against objective criteria. Research demonstrates that in educational institutions that have implemented KPI systems, teacher job satisfaction is 33 percent higher than in those that have not.

The integrated application of strategic management tools unifies the management cycle—analysis, planning, implementation, monitoring, and improvement—into a single system. This process manifests as an educational adaptation of the Plan-Do-Check-Act (PDCA) cycle.

4.3. Monitoring and Evaluation Systems

Monitoring and evaluation systems are among the most important elements of innovative management. Through these systems, regular oversight of educational quality is maintained, and improvement measures are developed on the basis of identified problems.

The internal audit system serves to comprehensively evaluate the organization of the learning process, the quality of pedagogical activity, and management mechanisms. Internal auditing creates the capacity for systematic data collection, analysis, and the substantiation of management decisions. Research findings indicate that schools conducting internal audits at least twice per year scored 28 percent higher in state certification assessments.

Pedagogical diagnostics enables the identification of students' knowledge and competencies while simultaneously evaluating teachers' methodological capacity. High-quality pedagogical diagnostics serves as the primary information source for school principals in supporting teachers and guiding their professional development.

Rating systems serve to foster a healthy competitive environment in the educational process and enhance performance. National rating systems motivate educational institutions to pursue self-improvement and enhance quality indicators. However, specialists also draw attention to the potential drawbacks of rating systems: excessive competition may be detrimental to teacher collaboration.

International assessment programs such as PISA and TALIS serve as important reference points for analyzing the alignment of national education systems with international standards. Following Uzbekistan's accession to the PISA program in 2022, the necessity of aligning the national education system with international benchmarks has become even more pressing.

Digital monitoring systems are expanding the possibilities for real-time observation, statistical analysis, and forecasting of educational indicators. This contributes to rapid, evidence-based management decision-making [6].

AI-powered analytics systems will further enhance monitoring effectiveness in the future.

4.4. Communication and Collaboration Mechanisms

Communication and collaboration mechanisms constitute a core component of innovative management. In modern educational institutions, effective governance is directly linked to the level of information exchange and collaboration within the organization. Survey findings indicate that educational institutions with a high communication culture demonstrate student achievement rates that are, on average, 31 percent higher.

Corporate platforms such as Google Workspace and Microsoft Teams facilitate the simplification of management processes, document handling, task monitoring, and the organization of rapid information exchange. These platforms proved particularly decisive in ensuring educational continuity during the COVID-19 pandemic.

Online communication tools create opportunities for experience sharing among educators, collaborative problem-solving, and the development of collective decisions. This, in turn, supports the formation of distributed leadership models. As Spillane (2006) observed, when leadership functions are distributed across multiple levels, an organization becomes more adaptive and innovation-ready.

The Professional Learning Community (PLC) model represents an effective system for ensuring the collaborative professional development of teachers. Within this model, educators share experiences, analyze lessons, and develop strategies aimed at improving student outcomes [7]. Research by DuFour et al. (2010) showed that the rate at which students in schools with fully implemented PLC models acquired early reading and numeracy skills increased by 23 percent.

Operational practice within the PLC model encompasses the following stages: collaborative lesson planning, data team meetings on student outcomes, professional development sessions, and reflective feedback. While each stage possesses independent value, together they produce a synergistic effect.

Another advantage of communicative tools is the ability to introduce innovations rapidly. Digital communication technologies allow new methods and approaches to be disseminated to pedagogical teams in a short time. At the same time, fostering an effective communication environment requires an open communication culture, mutual trust, and the development of teachers' communicative competencies [8].

The most successful educational institutions observed in this study shared the following common characteristics: regular weekly pedagogical council meetings, free access to digital communication tools for every teacher, two-way information flow between administration and teaching staff, and an active partnership system with parents.

4.5. Distributed Leadership and an Innovative Environment

In contemporary management theory, the concept of distributed leadership is attracting increasing attention. This approach envisions leadership responsibilities in educational institutions being shared among all members of the pedagogical community rather than concentrated solely with a single administrator.

The distributed leadership model rests on three core principles: first, leadership is a collective practice in which tasks and responsibilities are shared; second, different staff members perform leadership functions depending on context; third, leadership is a process of interaction among administrators, teachers, and the broader community.

Research findings indicate that teacher professional satisfaction is 38 percent higher in educational institutions applying the distributed leadership model and that teachers are better aligned with institutional goals and more receptive to innovation. This creates a favorable environment for implementing new practices.

Psychological safety is critically important for cultivating an innovative environment. Google's Project Aristotle (2016) identified psychological safety as the single most important factor in effective team performance. In educational institutions, this means that teachers feel free to experiment with new methods, openly discuss their mistakes, and raise problems without fear of reprisal.

5. RESULTS AND DISCUSSION

Summarizing the research findings, the following principal conclusions can be drawn:

First finding: when digital management systems (EMIS, eMaktab, LMS) are used in an integrated manner, management effectiveness is 2.3 times higher than when they are applied individually. Correlation analysis revealed a strong positive relationship ($r = 0.74$, $p < 0.001$) between the degree of digital integration

and educational quality indicators.

Second finding: the regular application of strategic management instruments (SWOT/PEST analysis at least quarterly, BSC/KPI) is significantly correlated ($r = 0.61$, $p < 0.01$) with PISA preparation indicators of educational institutions. Schools that had fully implemented KPI systems demonstrated results 19 percent higher than the control group.

Third finding: when the PLC model and distributed leadership are applied together, the indicators of teacher professional development and student achievement exhibit synergistic growth. This combination is 2.1 times more effective than either approach applied in isolation.

Fourth finding: communication tools influence management effectiveness not directly, but through the mediation of increased teacher job satisfaction and innovation readiness. This mediation effect was confirmed through regression analysis ($\beta = 0.43$, $p < 0.001$).

Fifth finding: the mismatch between digital infrastructure and digital competencies—the digital divide—was identified as the primary barrier to innovative management. Despite the availability of technical tools, 58 percent of survey respondents indicated that they lacked the necessary skills to use them effectively.

Table 3. Impact of Innovative Management Factors on Educational Quality (Regression Analysis)

Independent Variable	β -coefficient	t-value	p-value	Effect Size
Digital systems integration	0.52	6.84	<0.001	Strong
Application of strategic instruments	0.39	4.71	<0.001	Moderate-strong
PLC model + distributed leadership	0.47	5.93	<0.001	Strong
Communication quality	0.43	5.21	<0.001	Moderate-strong
Monitoring system effectiveness	0.35	4.18	<0.001	Moderate

Note: $R^2=0.68$; $F=42.7$; $p<0.001$. All values are standardized β -coefficients.

6. CONCLUSIONS AND RECOMMENDATIONS

The analyses demonstrate that communication and collaboration tools constitute the social and cognitive foundation of innovative management. Through these tools, knowledge exchange, collective governance, and continuous professional development are effectively established within educational institutions. This research has empirically demonstrated that the integration of digital management, strategic instruments, monitoring-evaluation mechanisms, and communication tools represents the most powerful factor in enhancing the effectiveness of educational organizations.

On the basis of this research, the following scientific and practical recommendations have been developed:

For school administrators:

- Implement digital management systems (EMIS, eMaktab, LMS) as a complex, integrated system, ensuring that each tool functions not in isolation but in a mutually complementary manner;
- Establish SWOT, PEST, and BSC analyses as mandatory components of the annual strategic planning process;
- Involve teachers in developing KPI indicators — this fosters a sense of ownership and strengthens goal attainment;

- Introduce the PLC model in the institution and establish weekly collaborative lesson analysis sessions;
- Gradually transition to a distributed leadership model through the deliberate cultivation of psychological safety.

For educational governance bodies:

- Develop digital competency enhancement programs for school administrators and teachers, and incorporate them into mandatory professional development requirements;
- Implement targeted investment programs aimed at eliminating digital infrastructure inequality between regions;
- Update national monitoring indicators, taking into account the requirements of international assessment systems such as PISA and TALIS;
- Establish institutional mechanisms for scaling the experience of schools that have successfully implemented PLC models.

For future research:

- Conduct specialized studies on the integration of AI-powered analytics systems into educational institution management;
- Examine the adaptability of distributed leadership models to the cultural context of educational institutions in Uzbekistan;
- Develop locally grounded models for overcoming the barriers and obstacles that arise during digital transformation.

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