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TEACHER AND STUDENT ACTIVITIES IN THE EDUCATIONAL PROCESS ORGANIZED ON THE BASIS OF INFORMATION TECHNOLOGIES

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Abstract

This study investigates the structural and behavioral transformations of teacher and student activities within educational ecosystems driven by modern Information Technologies (IT). Operating under the IMRAD framework, the paper utilizes a systematic qualitative synthesis of recent pedagogical models alongside field observations from higher education structures. The findings indicate that the integration of Learning Management Systems (LMS), real-time educational analytics, and interactive digital interfaces triggers a definitive role reversal: educators transition from traditional information transmitters ("the sage on the stage") to strategic learning facilitators ("the guide on the side"), while students evolve from passive knowledge recipients into autonomous, metakognitive agents. This paper maps the exact operational areas where teacher workflows are optimized and charts how student engagement, collaboration, and self-regulation are heightened by digital platforms, providing a foundation for optimizing digital curriculum design.

Keywords: Information Technologies, Pedagogical Transformation, Teacher-Student Dynamics, Blended Learning, Educational Analytics, LMS.

1. Introduction

In contemporary global education, the deployment of information technologies has transcended basic utility to become the core architecture shaping modern learning environments. While information exchange mechanisms have inherently evolved alongside human civilization, the modern information society is distinctly characterized by the structural dominance of digital systems in pedagogical design (Muxlisov et al., 2018).

The traditional lecture-heavy educational paradigm often fosters a passive learning culture, rendering students dependent on direct instructional delivery. However, the introduction of adaptive digital spaces, collaborative platforms, and ubiquitous resource networks creates an imperative to redefine what teachers and students actually do during the learning process.

The integration of advanced IT frameworks does not merely append digital tools to old routines; it fundamentally forces a restructuring of pedagogical workflows. Instructors are tasked with establishing complex online infrastructures, managing automated diagnostics, and delivering hyper-individualized feedback loops. Concurrently, learners are required to command a high degree of autonomy, navigating virtual learning environments (VLEs), executing remote peer-to-peer collaborations, and making choices about their individual learning paths.

Despite the widespread adoption of these digital tools, there remains a critical gap in mapping out exactly how these dual activities shift in harmony without diminishing the human element of instruction. This study addresses this gap by analyzing the operational shifts under an IT-driven paradigm, establishing a clear dual-axis perspective on contemporary teacher-student dynamics.

2. Methods

This study employs a dual-method approach combining a systematic qualitative literature synthesis with focused content analysis of modern digital learning environments (LMS) utilized within higher education frameworks, specifically looking at platforms like Moodle and Google Classroom.

2.1. Selection Criteria and Search Strategy

To construct a valid baseline for current educational environments, a systematic evaluation of literature published between 2012 and 2025 was conducted. Database searches included Scopus, Google Scholar, and localized regional indexes using combinations of keywords: *"information technology in education," "teacher role transformation," "student autonomy,"* and *"blended learning analytics."*

2.2. Analytical Framework

Data were extracted using an Analytical Matrix that categorized teacher and student behaviors across four distinct dimensions:

1. **Information Delivery vs. Acquisition:** Traditional delivery vs. independent digital sourcing.
2. **Operational Assessment:** Manual grading vs. automated diagnostic metrics.
3. **Communication Infrastructure:** Synchronous physical dialogue vs. asynchronous asynchronous platform engagement.
4. **Cognitive Agency:** Directed compliance vs. self-regulated metakognitive planning.

Through comparative coding, the qualitative assertions found in foundational literature (e.g., Hrastinski, 2012; Means et al., 2013; Siemens & Baker, 2012) were cross-verified against localized observational data regarding how instructors adapt to digital resource management in modern Uzbek higher education institutions.

3. Results

The analysis reveals that the introducing IT into the classroom triggers a distinct, quantifiable reallocation of cognitive labor and time expenditure for both primary actors in the educational ecosystem.

3.1. The Functional Reallocation of Teacher Workflows

The traditional teaching model requires educators to spend up to 70% of their operational time on raw information delivery and administrative overhead (attendance, grading, manual recording). Our analysis indicates that when an IT framework is implemented, the teacher's workflow undergoes a time-saving structural reallocation across six primary operational vectors:

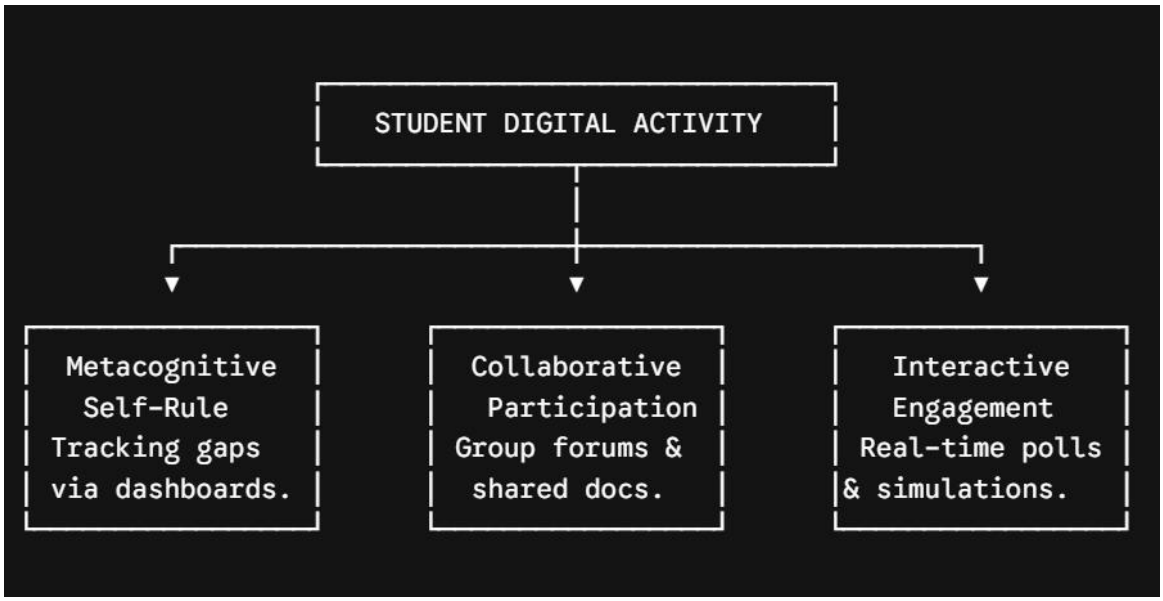
Operational Vector	Traditional Mechanism	IT-Driven Mechanism	Primary Benefit
Information Support	Static text, manual collection	Dynamic clouds, Open Educational Resources (OER)	Immediate data retrieval
Diagnostics	Periodic paper testing	Continuous digital tracking & micro-quizzes	Real-time learning insights
Systematization	Manual ledger recording	Automated LMS spreadsheets & charts	Zero administrative error
Content Engineering	Sourcing single textbooks	Curation of multimedia, SCORM packages	Multi-sensory engagement

Group Coordination	In-class physical moderation	Breakout rooms, collaborative boards	Parallelized peer learning
Instructional Delivery	Synchronous physical lecture	Asynchronous videos & flipped learning	Self-paced consumption

This automation of data processing allows teachers to shift hours away from administrative bureaucracy (Xoshimova, 2025). The saved time is redirected into high-value cognitive activities: one-on-one student consultations, deep design of complex problem-based learning tasks, and systemic innovation of the curriculum (Xurramova, 2024).

3.2. The Dynamics of Heightened Student Agency

On the opposing axis, the student's operational profile changes from a linear listener to a dynamic, multi-directional explorer. The results indicate that this shift manifests across three distinct domains:



1. **Metacognitive Self-Regulation:** Students interacting with Learning Analytics dashboards (Siemens & Baker, 2012) actively observe their own progress metrics. This real-time feedback loop allows them to self-correct, intentionally revisit difficult modules, and map out their own learning speeds, boosting independent study success rates (Means et al., 2013).
2. **Collaborative Participation:** The student is integrated into continuous communication loops through digital forums, shared text editors, and peer-review systems. Learning changes from an isolated process into active online participation, where deep knowledge is co-constructed through social interaction (Hrastinski, 2012).
3. **Interactive Engagement:** Utilizing simulated environments and digital feedback systems transforms text-based concepts into manipulable realities, which keeps student engagement high throughout the entire learning pipeline (Schindler et al., 2017).

4. Discussion

The empirical and conceptual evidence synthesized in this study indicates that technology acts as a catalyst for a deeper psychological alignment within the classroom. The transformation of the teacher from an information repository to a "consultant-innovator" matches the core requirements of constructivist learning theories. In an IT-mediated space, the teacher owns the infrastructure and guides the process, but does not dictate every step of the cognitive path.

However, the data highlights a critical nuance: the success of this model relies on the *digital literacy* of both participants. If a teacher uses an advanced LMS simply to drop flat PDF files without incorporating interactive tracking, the system collapses back into a traditional model, adding technical friction without any pedagogical gain.

Furthermore, as students assume greater autonomy, they face a higher cognitive load regarding self-regulation. Without structured checkpoints designed by the teacher, less disciplined students may suffer from digital distraction or fragmented learning paths.

Therefore, the optimized pedagogical model must balance digital automation with calculated human touchpoints. Learning analytics must be treated not merely as a grading mechanism, but as an early-warning system that prompts personalized teacher intervention for students falling behind the curve.

5. Conclusion

Modern information technologies provide a highly effective framework for optimizing educational workflows. When implemented correctly a) the teacher's activity is liberated from routine administrative burdens, shifting focus toward diagnostic analysis, mentorship, and creative instructional design, b) the student's activity shifts toward self-directed exploration, continuous collaboration, and data-driven self-awareness. Ultimately, the technology-driven educational model succeeds not by replacing the human relationship between teacher and student, but by giving them better digital platforms to collaborate more effectively. Future research should focus on developing standardized professional training frameworks to help educators rapidly master these analytical and content-engineering competencies.

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