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TRADITIONAL CLASSROOM ENVIRONMENT VS VIRTUAL EDUCATION: THE TRANSFORMATION OF THE TEACHER'S ROLE

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ABSTRACT

This article presents a comparative analysis of the transformation of the teacher's role in traditional classroom and virtual learning environments. The study examines the teacher's emerging functions as a facilitator, digital mentor, and learning architect in the context of educational digitalization. Based on a comparative analysis of didactic characteristics, an integrated hybrid model and a five-component teacher competency matrix are proposed. The research findings are of significant importance for improving teacher training systems and shaping digital pedagogy policy.

Keywords: traditional education, virtual learning, teacher's role, digital pedagogy, facilitator, hybrid learning, technological integration, competency matrix.

INTRODUCTION

The second quarter of the 21st century has ushered in unprecedented changes in global education systems. The COVID-19 pandemic (2020–2022) exposed the limitations of traditional education, necessitating a rapid transition to virtual learning worldwide. In more than 190 countries, 1.6 billion students shifted entirely to digital learning formats. This unprecedented pedagogical experience required a fundamental reconsideration not only of educational technologies but also of the teacher's role itself.

According to the UNESCO 2023 report, the system of competencies expected of teachers in the context of digital transformation is undergoing a complete overhaul, giving rise to a new pedagogical paradigm. Whereas in the 20th century the teacher's primary function was knowledge transmission, in the 21st century the teacher is becoming a guide to problem-solving, critical thinking, and collaboration. This transformation requires a reassessment of the relationship between traditional and virtual learning environments and the functional roles of teachers in both contexts.

The purpose of this article is to identify the patterns of transformation in the teacher's role through a comparative analysis of traditional and virtual learning environments, to substantiate an integrated hybrid competency model for the modern teacher, and to develop practical recommendations.

The following methods were employed in the study: comparative-analytical, systemic-structural, scientific literature review, and inductive generalization. The source base comprises documents from UNESCO, the OECD, and the European Commission, as well as research published in international scientific journals from 2018 to 2024.

I. THE TRADITIONAL CLASSROOM ENVIRONMENT: PEDAGOGICAL FOUNDATIONS AND LIMITATIONS

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The traditional classroom environment is recognized as one of the most stable institutions in the history of pedagogy. Its roots extend from the academies of ancient Greece to the madrasas of Central Asia. Within this environment, the teacher serves as the central figure — the primary source of knowledge, a moral exemplar, and a social authority.

As noted in J. Dewey's concept of progressive education, the traditional classroom — although built on an asymmetry of 'a large teacher and small students' — fulfills a number of important pedagogical functions, including: building a climate of trust through direct communication and emotional connection; developing social competencies through group dynamics; providing rapid correction and real-time feedback by the teacher; and preserving traditions, cultural values, and national pedagogical approaches.

At the same time, the traditional environment has notable limitations: difficulty in accommodating individual learning differences and varying developmental paces; dependence on fixed time and place; the predominance of one-way information flow; and student activity remaining at the level of passive reception. Viewed through the lens of L.S. Vygotsky's theory of the Zone of Proximal Development (ZPD), the traditional teacher typically implements a curriculum targeted at the average level of the class and is unable to address each student's individual ZPD.

II. THE VIRTUAL LEARNING ENVIRONMENT: NEW ROLES AND RESPONSIBILITIES FOR TEACHERS

The virtual learning environment (VLE) refers to an educational process organized through synchronous and asynchronous digital platforms, Learning Management Systems (LMS), video conferencing, and interactive content. Platforms such as Moodle, Canvas, Google Classroom, and Microsoft Teams are currently in active use in more than 150 countries. These platforms offer teachers entirely new opportunities — differentiated instruction, adaptive assessment, real-time analytics — along with new responsibilities.

M. Salmon's (2011) e-moderation model illustrates the five-stage development of the teacher's role in a virtual environment: technical access support, online socialization, information exchange, knowledge construction, and development. This model demonstrates that the teacher's role in a virtual environment differs fundamentally from traditional knowledge transmission.

Four key transformations of the teacher's role are observed in the virtual environment:

Facilitator role: The teacher shifts from transmitting knowledge to guiding its discovery. Through questioning, the teacher develops independent thinking, discussion skills, and problem-solving abilities.

Digital designer role: The teacher designs educational content and environments using technological tools, creating interactive tasks, multimedia materials, and gamification elements.

Personal mentor role: Individual guidance is strengthened. The teacher monitors each student's personal development trajectory through learning analytics.

Technological mediator role: By directing digital tools toward pedagogical goals, the teacher simultaneously develops students' digital competencies.

The OECD 2024 study shows that teachers in virtual environments spend 38% of their time on content creation and resolving technical issues — workloads that are virtually absent in

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traditional classrooms. Furthermore, maintaining student motivation in a virtual environment requires 2.3 times more effort than in a traditional setting.

III. COMPARATIVE ANALYSIS: DIDACTIC CHARACTERISTICS

To conduct a comparative didactic analysis of traditional and virtual learning environments, the TPACK (Technological Pedagogical Content Knowledge) model by P. Mishra and M. Koehler (2006) and the Anderson-Krathwohl taxonomy were used as a basis.

Criterion	Traditional Environment	Virtual Environment
Teacher's role	Knowledge source, supervisor	Facilitator, designer, mentor
Student activity	Low — passive reception	High — active construction
Flexibility	Limited (fixed schedule)	High (individual pace)
Socialization	Strong (face-to-face)	Weak (virtual interaction)
Feedback	Rapid (real-time)	Slower (asynchronous)
Individual differences	Difficult to accommodate	Adaptive opportunities
Assessment	Single standard	Multi-format, diverse
Cost and time	High (physical resources)	Low (digital resources)
Emotional connection	Strong	Limited

As the table illustrates, both environments possess complementary characteristics: the traditional environment excels in socialization and emotional connection, while the virtual environment is stronger in flexibility and individualization. This substantiates the importance of the hybrid model.

IV. INTEGRATED HYBRID MODEL AND FIVE-COMPONENT COMPETENCY MATRIX FOR TEACHERS

The 'blended learning' (hybrid learning) model purposefully combines the didactic potential of both traditional and virtual education. According to C. Graham's (2006) definition, hybrid learning is a meaningful integration of face-to-face instruction and computer-mediated learning. This model is implemented at three main levels: the activity level (individual sessions), the course level (combination of modules), and the program level (integration of educational programs).

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For the hybrid model to function effectively, teachers are required to possess the following five-component competency matrix, developed on the basis of UNESCO ICT-CFT (2023) and European DigComp 2.2 documents:

1. Pedagogical competency — designing learning that takes into account individual differences, applying differentiated approaches, and conducting formative assessment;

2. Technological competency — purposefully selecting digital tools, working with LMS systems, and creating digital content;

3. Communication competency — effective interaction in both real and virtual environments, online moderation, and emotional intelligence;

4. Analytical competency — monitoring student progress based on learning analytics data and making informed decisions;

5. Creative-innovative competency — developing adaptive teaching strategies for new situations and generalizing pedagogical experience.

This matrix is non-linear — each competency is interconnected with and reinforces the others. For example, analytical competency enriches pedagogical competency, while technological competency forms the practical foundation of creative-innovative competency.

CONCLUSIONS

The comparative analysis conducted leads to the following scientific conclusions:

1. The traditional classroom environment and virtual learning do not negate one another — they are complementary pedagogical environments, each with its own distinctive didactic potential.
2. The teacher's role is transitioning from a one-dimensional model (knowledge transmitter) to a multi-dimensional model (facilitator, designer, mentor, technological mediator) — representing a new paradigm in the science of pedagogy.
3. The hybrid learning model, by combining the strengths of both environments, enables student-centered, flexible, and effective education.
4. A five-component competency matrix (pedagogical, technological, communicational, analytical, and creative) has been proposed for the modern teacher.
5. With the advancement of artificial intelligence and adaptive learning technologies, the teacher's role will become even more complex; however, its essence — human interaction and guidance — will not lose its significance.

The following practical recommendations are proposed: (a) allocate no less than 30% of hours in teacher professional development programs to digital pedagogical competencies; (b) develop a methodological guide for implementing the hybrid learning model in higher education institutions; (c) establish a system for certifying teachers' digital competencies.

REFERENCES

1. UNESCO. Reimagining our futures together: A new social contract for education. — Paris: UNESCO Publishing, 2021. — 186 p.

2. UNESCO. ICT Competency Framework for Teachers (ICT-CFT). Version 3. — Paris: UNESCO, 2023. — 68 p.

3. Anderson L.W., Krathwohl D.R. A Taxonomy for Learning, Teaching, and Assessing. — New York: Longman, 2001. — 352 p.

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4. Dewey J. Experience and Education. — New York: Macmillan, 1938. — 116 p.

5. Mishra P., Koehler M.J. Technological Pedagogical Content Knowledge // Teachers College Record. — 2006. — Vol. 108, No. 6. — P. 1017–1054.

6. Vygotsky L.S. Mind in Society: The Development of Higher Psychological Processes. — Cambridge: Harvard University Press, 1978. — 159 p.

7. Moore M.G., Kearsley G. Distance Education: A Systems View of Online Learning. 3rd ed. — Belmont: Wadsworth, 2011. — 384 p.

8. Salmon G. E-Moderating: The Key to Online Teaching and Learning. 3rd ed. — New York: Routledge, 2011. — 264 p.

9. OECD. Education at a Glance 2024: OECD Indicators. — Paris: OECD Publishing, 2024. — 512 p.

10. Graham C.R. Blended Learning Systems: Definition, Current Trends, and Future Directions // Handbook of Blended Learning. — San Francisco: Pfeiffer, 2006. — P. 3–21.

11. European Commission. DigComp 2.2: The Digital Competence Framework for Citizens. — Luxembourg: Publications Office, 2022. — 226 p.

12. Siemens G. Connectivism: A Learning Theory for the Digital Age // International Journal of Instructional Technology and Distance Learning. — 2005. — Vol. 2, No. 1. — P. 3–10.

13. Beetham H., Sharpe R. Rethinking Pedagogy for a Digital Age. 3rd ed. — New York: Routledge, 2019. — 296 p.

14. Republic of Uzbekistan, Presidential Decree No. PQ-248 of 24 May 2023 'On Measures to Expand the Coverage and Improve the Quality of Digital Services and to Digitally Transform Sectors, Industries, and Regions.' — Tashkent, 2023.