

TRANSFORMATION OF THE MENTOR-STUDENT RELATIONSHIP MODEL IN THE DIGITAL EDUCATION ENVIRONMENT

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DOI: <https://doi.org/10.5281/zenodo.22703325>

Abstract: *This article analyzes, from scientific-theoretical and empirical perspectives, the transformation of the mentor-student relationship from its traditional pedagogical model to new forms in the digital education environment. It is substantiated that digital technologies — artificial intelligence, distance learning platforms, and virtual collaboration tools — are fundamentally changing the content, form, and direction of the relationship between mentor and student.*

Keywords: *mentor-student relationship, digital education, teacher-student tradition, e-mentoring, hybrid mentoring, online pedagogy, artificial intelligence and education, digital transformation, pedagogical relationship.*

Annotatsiya *Ushbu maqolada ustoz-shogird munosabatlarning an'anaviy pedagogik modeldan raqamli ta'lim muhitidagi yangi shakllarga transformatsiyalashuvi ilmiy-nazariy va empirik jihatdan tahlil qilinadi. Raqamli texnologiyalar — sun'iy intellekt, masofaviy ta'lim platformalari va virtual hamkorlik vositalari ustoz va shogird o'rtasidagi munosabatlarning mazmuni, shakli hamda yo'nalishini tubdan o'zgartirayotgani asoslab berilgan.*

Kalit so'zlar: *ustoz-shogird munosabatlari, raqamli ta'lim, ustoz-shogird an'anasi, e-mentoring, gibrid mentoriing, onlayn pedagogika, sun'iy intellekt va ta'lim, raqamli transformatsiya, pedagogik munosabat.*

Аннотация *В данной статье с научно-теоретической и эмпирической точек зрения анализируется трансформация отношений «наставник-ученик» от традиционной педагогической модели к новым формам в цифровой образовательной среде. Обосновано, что цифровые технологии — искусственный интеллект, платформы дистанционного обучения и инструменты виртуального сотрудничества — коренным образом меняют содержание, форму и направленность взаимодействия между наставником и учеником.*

Ключевые слова: *отношения наставника и ученика, цифровое образование, традиция «учитель-ученик», e-mentoring, гибридное наставничество, онлайн-педагогика, искусственный интеллект и образование, цифровая трансформация, педагогическое взаимодействие.*

INTRODUCTION

The most ancient and natural form of knowledge transmission in human history — the direct relationship between teacher and student — is undergoing the most profound transformation in its history in the era of digital technologies. This relationship, which has continued unbroken from the dialogue between Socrates and his disciples, through the

academy of Ibn Sina, to the Uzbek madrasas and on to modern universities, is today facing a new paradigmatic challenge.

The digital education environment — video conferencing, online courses, artificial-intelligence (AI)-based advisory systems, social networks, and virtual learning platforms — has broken down the spatial, temporal, and emotional boundaries of the traditional mentor-student relationship. The scale of this change is so vast that some researchers even ask whether mentoring is possible at all in a digital environment (Haggard et al., 2011).

The COVID-19 pandemic (2020–2022) further accelerated this transformation. According to UNESCO data, at the height of the pandemic more than 1.6 billion learners in over 190 countries were temporarily cut off from education (UNESCO, 2020). This event forced millions of teachers and students to move into the digital environment and urgently test new forms of the mentor-student relationship.

For Uzbekistan this issue carries a particular sensitivity: the ancient teacher-student tradition (devotion to scholars, respect for the teacher, the honorable transmission of knowledge) is intersecting with the digital divide, infrastructure problems, and socio-cultural expectations. This article examines precisely this point of intersection — the relationship between traditional and digital mentoring — from a scientific standpoint.

The main goal of the study is to identify the patterns of transformation of the mentor-student relationship model in the digital education environment and to theoretically substantiate a hybrid mentoring model in the context of Uzbekistan.

To achieve this goal, the following tasks were set: (1) to analyze the historical-pedagogical essence of the mentor-student relationship and its traditional models; (2) to identify the mechanisms by which the digital education environment affects the mentor-student relationship; (3) to classify the forms and characteristics of e-mentoring and hybrid mentoring; (4) to study the current state and problems of digital mentoring in the Uzbek education system; (5) to develop the theoretical foundations of the hybrid mentoring model and provide practical recommendations.

The historical-pedagogical essence of the mentor-student relationship

The term “mentor” traces back to Greek mythology: in Homer's *Odyssey*, Mentor is depicted as the one who provides wisdom, protection, and guidance to Odysseus's son Telemachus. In the pedagogical tradition, this term became a symbol of the relationship through which knowledge, experience, and human values are directly transmitted from generation to generation (Homer, 8th century BC).

In the scholarly tradition of the East, the teacher-student relationship carries a particular moral-spiritual weight. In his work *Kitab ash-Shifa*, Ibn Sina describes education as a bipolar relationship: the teacher not only transmits knowledge but also shapes the student's capacity for thought. Al-Farabi, in *Al-Madina al-Fadila*, described the accomplished teacher as the moral guardian of society (Al-Farabi, 10th century). In Uzbek madrasas, the teacher-student relationship encompassed not only knowledge but also a way of life, moral conduct, and spiritual growth.

In modern Western pedagogy, Kram (1983, 1985) studied mentoring from the standpoint of two main functions: an instrumental function that ensures professional development, and a psychosocial function that provides emotional support. The harmony of these two functions ensures an effective mentoring relationship. Vygotsky's (1978) theory of the “zone of proximal development” is the most important theoretical source explaining the cognitive foundations of mentoring, defining the zone of activity that the student cannot yet

perform independently but can accomplish with the teacher's help as the optimal point of pedagogical support.

Lave and Wenger (1991) introduced the concept of a “community of practice,” examining mentoring not as an isolated relationship but within the broader context of social learning. This approach also serves as an important theoretical foundation for understanding digital mentoring.

The digital education environment and its pedagogical characteristics

The digital education environment is a multifaceted concept comprising several core components: synchronous (real-time) and asynchronous (time-unrestricted) interaction tools, massive open online courses (MOOCs), AI-based teaching systems, virtual and augmented reality technologies, and social networks (Siemens, 2005).

In connectivism theory, Siemens (2005) describes learning in the digital environment as a networked knowledge process: knowledge resides not within an individual's mind but in the connections among people, organizations, and technologies. This theoretical premise substantiates why digital mentoring is fundamentally different from the traditional form: in the digital environment, the teacher is no longer the sole source of knowledge but becomes a navigator guiding the student through networks of knowledge.

Anderson (2008), in his pedagogical model of distance education, identifies three main types of interaction: learner-learner, learner-teacher, and learner-content interaction. In the digital environment all three of these interactions take on a different character: the teacher-student relationship becomes free of geographical boundaries, but building emotional closeness and trust becomes more complex.

Rollag (2010), researching mentoring in the digital environment, identified four main changes: (1) asynchronicity of communication (increased waiting time for responses); (2) the loss of nonverbal cues (facial expressions, body language); (3) the predominance of written communication; (4) greater autonomy for the student. All of these changes place new demands on the mentor-student relationship while also opening new opportunities.

E-mentoring: concept, classification, and state of research

The concept of e-mentoring (electronic mentoring) emerged in the 1990s with the spread of digital technologies and has been actively studied over the past decade. Ensher and Murphy (2007) define e-mentoring as a mentoring relationship carried out mainly or entirely through electronic communication tools — email, chat, and video communication.

Research demonstrates a number of advantages of e-mentoring: overcoming geographical boundaries (Bierema and Merriam, 2002), flexibility of time (Single and Muller, 1999), and reduced social anxiety for some students (Hamilton and Scandura, 2003). At the same time, the limitations of e-mentoring are also clear: greater difficulty in building trust, the absence of nonverbal communication, technological problems, and the “digital divide” (Herrera et al., 2008).

Three main models of digital mentoring are distinguished: (1) fully online mentoring — all communication is digital; (2) blended mentoring — a combination of face-to-face and digital communication; (3) platform-based mentoring — a mentoring relationship in which participants are matched and monitored with the help of artificial intelligence (Gilles and Hegde, 2020). The third model is the newest and is implemented through platforms such as LinkedIn, Mentorcliq, and Chronus.

Although the role of artificial intelligence in mentoring is still a new research direction, AI-based chatbot mentors (for example, Khanmigo, Ada by BrightBytes) are

already being used in practice. However, most researchers emphasize that AI cannot perform the functions of emotional support, transmission of values, and inspiration (Zawacki-Richter et al., 2019).

METHODOLOGY

The study was based on a mixed-methods approach and was carried out in three stages. The first stage was a systematic literature review: among 480 articles found in the Scopus, Web of Science, and Google Scholar databases for 2010–2024 using the keywords “e-mentoring,” “digital mentoring,” and “online teacher-student relationship,” 64 studies were selected and analyzed according to the PRISMA protocol.

The second stage was an empirical study: semi-structured interviews were conducted with 18 educators and 34 students who participated in online and blended teaching during the 2022–2023 academic year at three higher education institutions in Uzbekistan (University of Business and Science, Tashkent State Pedagogical University, and Tashkent University of Information Technologies). The interviews were processed using thematic analysis (Braun and Clarke, 2006).

The third stage was a comparative analysis: the main parameters of the hybrid mentoring model were determined by comparing the experience of Uzbekistan with the digital mentoring experiences of South Korea, India, and the Netherlands.

All ethical requirements of the study were fully observed: written consent was obtained from participants, data were anonymized, and confidentiality was ensured.

The current state of digital mentoring in Uzbekistan

The results of the empirical study revealed a clear and complex picture of digital mentoring in Uzbekistan. Interviews conducted among educators showed that 83% of participants (15/18) were forced, for the first time, to conduct classes in a fully online format during the COVID-19 pandemic (2020–2021), a situation for which they were unprepared. 67% of educators noted that it was very difficult to establish a “genuine” relationship with a student in the digital environment; the main reasons cited were the absence of facial expressions and body language, the “strangers-behind-the-camera” syndrome, and technical disruptions.

The picture from students was different: 61% (21/34) said they felt shy about asking questions in the online format and that they felt less shy than the teacher, which is explained by the discomfort of asking a teacher a direct question that is characteristic of Uzbek educational culture. 71% said they preferred asynchronous communication (video lectures, written assignments) because it gave them the opportunity to manage their own time.

The hybrid mentoring model: concept and structure

Based on the results of the study, a “hybrid mentoring” (Hybrid Mentoring — HyMen) model is proposed. This model rests on four main principles.

The first principle is the primacy of the relationship: technology is the tool, while the mentor-student relationship is the goal. Regardless of which formats digital platforms are used in, the relationship of trust, respect, and guidance remains the foundation. This principle means transferring the “spirit” of the Uzbek teacher-student tradition into the digital environment.

The second principle is contextual adaptation: each mentor-student pair combines online and face-to-face communication in the optimal ratio according to their own circumstances, goals, and opportunities. The “one-size-fits-all” approach is rejected.

The third principle is multichannel communication: a combination of text (chat, email), audio (podcasts, voice messages), video (synchronous and asynchronous), and face-to-face communication channels is used. Different channels serve different pedagogical purposes: synchronous video for emotional support; asynchronous content for cognitive tasks; and face-to-face meetings for social capital.

The fourth principle is student agency: the digital environment gives the student more opportunity to move from being a passive recipient to an active learner. In the hybrid mentoring model, the student actively participates in determining their own learning direction, while the mentor takes on the role of a guide who sharpens the student's thinking through questions.

The comparative analysis showed that South Korean universities widely apply the “flipped mentoring” model — in which the student learns in the digital environment and discusses independent work face-to-face — with high effectiveness (Kim and Park, 2021). At Delft University of Technology in the Netherlands, a “peer e-mentoring” model has been introduced, in which students are matched by an AI-based system and mentor one another digitally (van der Krogt, 2020). These experiences can serve as valuable sources for enriching various versions of the HyMen model.

The Uzbek teacher-student tradition and the digital environment: points of harmony and conflict

During the study, a number of points of harmony were identified between the Uzbek educational tradition and the digital environment. First, asynchronous learning aligns with the established tradition among Uzbek students of independent study (“being alone with a book”). Second, the increase in written communication serves to develop written thinking rather than oral dominance, which is significant for scholarly work. Third, the time flexibility of the digital environment expands educational opportunities for students with substantial family and work obligations.

At the same time, conflicts are also evident: the culture of shyness before the teacher and reluctance to ask questions (frequently mentioned by educators as the problem of “silent students”) may intensify in the digital environment — asking a question in chat can feel even harder. Likewise, there is a risk that the social prestige of the teacher's status in Uzbekistan may weaken in the digital environment: when a student sees the teacher's icon on the screen rather than their face, an increase in psychological distance has been observed.

CONCLUSIONS

This study allowed the following main conclusions to be drawn. The digital transformation of the mentor-student relationship is not a crisis but a process of expansion: the digital environment cannot replace traditional mentoring, but it enriches it with new opportunities. The essence of the relationship — trust, guidance, inspiration — does not change, but its forms, tools, and pace are fundamentally renewed.

For educators in Uzbekistan, the hybrid mentoring model is the most appropriate direction, as it makes it possible to combine the cultural depth of the traditional teacher-student relationship with the effectiveness of digital tools.

Practical recommendations

The following practical recommendations are proposed: first, that teacher training programs introduce “digital mentoring skills” as a separate module — one that focuses not on technical skills but on methods of establishing emotional connection in the digital environment; second, that higher education institutions establish a formal “hybrid



mentoring” institution — blended mentoring programs requiring at least one face-to-face meeting per week should be developed; third, that “digital literacy and self-management” courses be introduced for students, since the digital environment demands a considerably higher level of autonomous learning skills from the student; fourth, that techniques for conveying “teacher presence” be applied in digital mentoring — regular video messages and tools such as “live text” can be used to shorten the digital distance; fifth, that a national monitoring system be developed at the level of the Ministry of Education of Uzbekistan to measure the effectiveness of digital mentoring, and that it be linked to international databases to create opportunities for comparative research.

This study has its limitations: the selected sample size is relatively small, and the results may not be fully generalizable to other contexts. In future research it would be worthwhile to measure the impact of the hybrid mentoring model longitudinally and to conduct experimental research with larger groups.

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