

**СЕКЦІЯ «СУЧАСНА ОСВІТА ТА ПЕДАГОГІЧНА
МАЙСТЕРНІСТЬ»**

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**SELF-EDUCATION IN THE DIGITAL ENVIRONMENT:
VECTORS OF CONTINUOUS PROFESSIONAL DEVELOPMENT**

The professional realities of academic staff at technical universities have undergone a decisive transformation over the past decade, driven by the convergent pressures of Industry 4.0, the rapid proliferation of digital pedagogical tools, and – in the Ukrainian context – the sustained institutional disruptions of armed conflict. The traditional model of qualification upgrading, characterised by periodic attendance at institution-sanctioned training courses and state-administered refresher programmes, has been rendered structurally insufficient by the pace of technological and disciplinary change. A lecturer in engineering, computer science, or applied linguistics at a Ukrainian technical university today must simultaneously sustain expertise in fast-evolving technical domains, command a widening repertoire of pedagogical approaches – including Content and Language Integrated Learning (CLIL) and English for Specific Purposes (ESP) – and do so under conditions of infrastructural instability that no pre-war professional development framework was designed to accommodate.

It is within this compound context that Massive Open Online Courses (MOOCs) and Professional Learning Networks (PLNs) have emerged as the most practically salient vectors of self-directed faculty development. MOOCs, delivered through global platforms such as Coursera, edX, and FutureLearn, provide structured, certification-bearing upskilling that is asynchronous, mobile-

accessible, and largely electricity-independent in offline mode. PLNs – defined as self-curated networks of people, digital spaces, and cognitive tools through which educators pursue ongoing professional growth – offer a complementary modality: informal, socially embedded, and responsive to the immediate practical challenges of classroom work. Together, these two vectors constitute the primary infrastructure of digital self-education for technical university faculty navigating the realities of wartime Ukraine.

This paper analyses the affordances, limitations, and institutional implications of both modalities. Its objective is not merely descriptive but normative: to argue, on the basis of scholarly evidence and practitioner observation, that digital self-education through MOOCs and PLNs represents a core professional competency that Ukrainian technical universities must formally recognise and actively support.

The scholarly literature on digitally mediated faculty professional development has expanded considerably in the wake of the COVID-19 pandemic, with a particularly sharp increase in Scopus- and WoS-indexed publications addressing the intersection of MOOC participation and workforce upskilling. Goglio and Bertolini, in their qualitative study [1] in the *Journal of Workplace Learning* and drawing on interviews with European MOOC learners, demonstrated that MOOC participation generates tangible labour-market and professional returns – notably in the acquisition of both technical competencies and transferable skills – and that the principal perceived advantages are the time flexibility and low entry cost that render MOOCs compatible with the irregular working patterns characteristic of crisis-affected professional environments. Their finding that MOOC learners value above all the accessibility of new disciplinary knowledge, rather than the formal credential per se, is directly relevant to the Ukrainian technical university context, where professional currency rather than institutional certification tends to motivate self-directed learning engagement.

On the question of PLNs, Trust, Krutka, and Carpenter, in a widely cited study published in *Computers & Education*, established [2] the conceptual and empirical framework that has informed most subsequent research in this domain. Their analysis of educators' PLN practices identified four interrelated dimensions of professional growth that PLN engagement supports: affective, cognitive, social, and identity development. Critically, they demonstrated that PLN participation enables educators to overcome the isolation and resource constraints characteristic of individual institutional contexts – a finding of particular salience for Ukrainian lecturers, whose institutional environments have been substantially disrupted by wartime conditions. The shift from top-down, institution-prescribed professional development to self-directed, laterally networked learning that PLNs facilitate represents not merely a preference but, under wartime conditions, a structural necessity.

At the intersection of these two domains, Crompton and Burke, in a systematic review [3] published in the *International Journal of Educational Technology in Higher Education*, documented the accelerating integration of digital tools – including AI-based systems and networked learning platforms – into higher education practice, and identified critical digital literacy as the key mediating competency that determines whether digital tool adoption translates into genuine professional learning gains. Their observation that adoption rates far outpace the development of the evaluative competencies required to deploy digital tools judiciously is a caution that applies equally to MOOC engagement and PLN participation, and that the present paper takes as a guiding analytical concern.

MOOCs function as a tool for upskilling along two principal axes. The first is hard skills acquisition: technical university lecturers report drawing on platforms such as *Coursera* and *edX* to maintain [4] pace with industry-specific developments – in areas ranging from machine learning and data engineering to advanced materials science – that disciplinary publications alone cannot convey

with sufficient pedagogical clarity or methodological grounding. The second axis is pedagogical methodology: the availability of internationally accredited courses in CLIL, academic writing instruction, assessment design, and digital pedagogy enables lecturers to extend their methodological repertoire without institutional intermediation. The global certification attached to MOOC completion serves a dual function: it validates professional competence [5] in the eyes of peers and administrators, and it integrates international standards into local curricula by familiarising lecturers with the approaches and expectations of the global academic community.

The practical value of MOOCs under wartime conditions deserves particular emphasis. Their asynchronous structure means that learning can be parcelled across irregular time segments – the intervals between alert periods, the short windows of electricity availability during scheduled outages – in ways that synchronous professional development activities cannot accommodate. Platforms that support offline content access allow [6] lecture recordings and reading materials to be pre-downloaded during periods of connectivity and engaged with subsequently, rendering the learning process partially independent of infrastructure availability. This technical affordance transforms what would otherwise be dead time – waiting in shelters, commuting, recovering from disrupted sleep – into productive self-educational engagement.

PLNs and Professional Learning Communities complement MOOC-based development by providing the social and affective dimensions of professional growth that structured courses cannot replicate. The shift from isolated teaching practice to collaborative knowledge building – through participation in specialised LinkedIn groups, ResearchGate communities, international academic associations, and messaging-application-based peer networks – enables technical university lecturers to access just-in-time practical wisdom: solutions to specific classroom challenges, recommendations for newly available resources, and lateral support in

navigating the emotional and professional demands of wartime academic work. Informal learning through PLNs is characterised by its responsiveness: it is activated precisely at the moment of need, in the register appropriate to the specific challenge, and without the scheduling constraints that formal professional development imposes.

The synergy between MOOC-acquired competencies and PLN-mediated knowledge sharing generates what might be termed a multiplicative professional development effect. A lecturer who has completed a *Coursera* specialisation in data-driven instruction is better positioned, through PLN participation, to contextualise that competency within the specific disciplinary and institutional conditions of Ukrainian technical higher education, to identify the adaptations required for implementation with engineering students, and to obtain peer feedback on early attempts at application. Conversely, PLN engagement frequently generates awareness of MOOC resources that structured institutional communication channels would not have surfaced. The two vectors are, in this sense, mutually reinforcing rather than parallel alternatives. The integration of self-acquired digital competencies into teaching practice is not automatic, however: it requires the metacognitive capacity to evaluate the relevance and transferability of externally acquired knowledge to specific local contexts – a capacity that itself warrants institutional attention and support.

Conclusion. The foregoing analysis yields three conclusions of both theoretical and institutional significance. First, the evidence drawn from Scopus- and WoS-indexed scholarship, triangulated with practitioner observation in the wartime Ukrainian context, establishes that MOOCs and PLNs are not supplementary amenities in a well-functioning professional development system but primary and irreplaceable vectors of self-directed faculty upskilling under conditions of institutional instability. Digital self-education is no longer optional:

it has become a constitutive dimension of professional identity for technically qualified academic staff in a globalised and disrupted higher education landscape.

Second, the institutional implications are unambiguous. Ukrainian technical universities that continue to evaluate faculty professional development exclusively through the lens of formally accredited, institution-managed qualification upgrading are systematically failing to recognise the most significant professional learning activity their lecturers are actually undertaking. Policy frameworks must be revised to acknowledge MOOC certification as evidence of continuing professional engagement, and to create institutional structures – whether through recognised communities of practice, PLN-oriented faculty development workshops, or protected time for self-directed digital learning – that actively support rather than merely tolerate informal digital upskilling.

Third, and most importantly, the wartime conditions of Ukrainian higher education have not simply disrupted professional development: they have, paradoxically, accelerated the transition to precisely the forms of digitally mediated, self-directed, socially networked professional learning that the global scholarly community has identified as most responsive to the demands of twenty-first-century knowledge work. The adaptive creativity demonstrated by Ukrainian technical university lecturers in leveraging MOOCs and PLNs under conditions of unprecedented institutional pressure is a professional legacy that deserves scholarly recognition and, above all, durable institutional support.

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