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THE STUDY OF DIGITAL EDUCATION TERMINOLOGY IN MODERN LINGUISTICS

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Abstract. The article examines the terminology of digital education as an object of modern linguistic research. Digital education terminology has developed quickly, especially after the COVID-19 pandemic, and it is still unstable. The study analyses English terms from academic and policy sources and their Uzbek equivalents. Definitional, word-formation, componential and comparative methods are used. The results show five thematic groups of terms and five main ways of term formation: compounding, combining forms, abbreviation, blending and terminologisation of general words. The main semantic problems are synonymy, overlapping definitions and polysemy. In Uzbek, these terms enter the language through borrowing, calque and hybrid formation. The findings can be used in terminography, translation and teaching.

Keywords: digital education, terminology, term formation, synonymy, terminological variation, borrowing, calque, English, Uzbek.

Introduction. Digital technologies have changed not only how people teach and learn but also how they talk about teaching and learning. In the last two decades, terms such as «e-learning», «blended learning», «learning management system», «MOOC», «digital competence» and «learning analytics» have moved from specialist literature into university regulations, government programmes and everyday conversation. The COVID-19 pandemic speeded up this process. Within a few months, millions of teachers and students had to use new tools and, at the same time, new words.

For linguistics, this situation is of special interest. Digital education terminology is a young and open system. It is formed at the intersection of pedagogy, computer science and management. Its terms are created and spread very quickly, often before scholars or standardisation bodies can define them. As a result, the same term may be used with different meanings, and different terms may be used for the same concept. These problems make communication between researchers, teachers and policy makers more difficult. They also create difficulties for translators and dictionary makers, especially in languages such as Uzbek, where many terms are borrowed or calqued from English.

The aim of this article is to describe the main linguistic features of digital education terminology and to show how modern linguistics approaches this field. The objectives are: 1) to review the theoretical approaches to the study of terminology; 2) to identify the thematic groups of digital education terms; 3) to describe the main ways of term formation; 4) to analyse the semantic relations within the system; 5) to show how English terms are adapted in Uzbek.

Literature review and research methodology. Theoretical Approaches to Terminology. Modern terminology science has developed several approaches. The classical approach, described by A.V.Superanskaya and co-authors, treats the term as a word or phrase with a fixed definition that names a concept within a system [1]. This approach stresses precision, one-to-one correspondence

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between concept and term, and the avoidance of synonymy. It is also reflected in the international standard ISO 1087, which defines the basic notions of terminology work [2]. J.C.Sager describes terminology as a practical activity of collecting, describing and presenting terms [3].

Later approaches pay more attention to real communication. M.T.Cabré proposes a communicative theory of terminology. In this theory a term is a lexical unit that acquires its special value in a particular communicative situation [4]. R.Temmerman develops a sociocognitive approach. She argues that many concepts in new fields have fuzzy borders and that synonymy and polysemy in such fields are natural and even useful [5]. These approaches are particularly relevant for digital education, which is a young and rapidly changing field.

Studies of Digital Education Terms. The instability of digital education terminology was noted by educational researchers before it became a linguistic topic. J.L.Moore, C.Dickson-Deane and K.Galyen analysed research articles and surveyed specialists. They found that the terms «distance learning», «e-learning» and «online learning» were used inconsistently, and that people had different expectations of each label [6]. C.Hodges and co-authors proposed the term «emergency remote teaching» to distinguish the urgent shift to online instruction during the pandemic from well-planned online learning [7]. These two works show that the choice of a term is not neutral: it affects how teaching is evaluated.

In Russian linguistics, R.R.Mukhametshin analysed the terms for electronic, digital, distance, online and blended learning. He showed that «digital» and «electronic» learning are often used as synonyms in Russian literature and regulations [8]. V.A.Zavarzina proposed a classification of the terminology of modern education. Her classification covers terms proper, pre-terms, terminoids, professionalisms and jargon, and it describes their structure, origin and degree of assimilation [9]. N.A.Bozhenkova and co-authors studied a dictionary of IT terms in the context of the digitalisation of education [10]. E.V.Marinova described term creation in Russian discourse about the «digital» [11].

In Uzbek linguistics, G.R.Mirxanova has reviewed the development of Uzbek terminology from its early sources to the present [12]. S.A.Sharipova has analysed the connotations of AI-related neologisms in English and Uzbek educational discourse [13]. However, digital education terminology as a whole has rarely been studied in the English–Uzbek pair. This article attempts to fill this gap.

The material consists of more than 30 English terms of digital education. They were collected from academic sources [6], [7], from the European framework for the digital competence of educators, DigCompEdu [14], and from university glossaries of online teaching. Their Uzbek equivalents were taken from Uzbek academic and educational texts. Where no established equivalent exists, the author’s own suggestion is given and marked as such.

Four methods were used. Definitional analysis compared the definitions of each term in different sources. Word-formation analysis identified the structural models of the terms, following the description of English word-formation by I.Plag [15]. Componential analysis was used to identify the shared and distinctive features of related terms. Comparative analysis was used to describe how English terms are adapted in Uzbek. The study is qualitative. It does not use statistical calculations, and the examples illustrate tendencies rather than measure frequencies.

Results and discussion. Thematic Groups of Terms. The collected terms fall into five thematic groups. The first group names modes of delivery: «e-learning», «online learning», «distance learning», «blended learning», «hybrid learning», «flipped classroom» and «emergency remote teaching». The second group names platforms and tools: «learning management system (LMS)», «virtual classroom»,

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«webinar», «video conferencing» and «MOOC». The third group names content and resources: «open educational resources (OER)», «e-textbook», «microlearning» and «digital content». The fourth group names competences: «digital literacy», «digital competence» and «media literacy» [14]. The fifth group names assessment and analysis: «e-assessment», «e-portfolio», «online proctoring», «learning analytics» and «adaptive learning».

A new subgroup is now forming. With the spread of artificial intelligence, terms such as «AI tutor», «chatbot», «prompt» and «AI literacy» are entering educational discourse [13]. This shows that the boundaries of the field are open: new terms come from computer science and are quickly reinterpreted in pedagogical contexts.

Ways of Term Formation. Five main ways of term formation were identified. The first and most productive is compounding, that is the combination of two or more words: «learning management system», «virtual classroom», «learning analytics». Multi-word terms are typical of the field, because they make the concept explicit. The second way is the use of combining forms and prefixes: «e-learning», «e-portfolio», «e-assessment», «microlearning», «cyberbullying». The element «e-» is especially productive and can be attached to almost any educational noun.

The third way is abbreviation. Long multi-word terms are often shortened to acronyms: «LMS», «MOOC», «OER», «ERT», «VLE» (virtual learning environment). In professional discourse the acronym often becomes more common than the full form. The fourth way is blending, which joins parts of two words: «webinar» (web + seminar), «edtech» (education + technology). The fifth way is the terminologisation of general words. Everyday words acquire a special meaning in the field: «platform», «cloud», «synchronous» and «asynchronous», «flipped».

Semantic Relations and Problems. The analysis confirmed three main semantic problems. The first is synonymy and overlap. The terms «e-learning», «online learning» and «digital learning» are often used as synonyms, although some authors distinguish them. Those who distinguish them use different criteria, such as the type of technology, the role of the internet, or the synchronous or asynchronous mode of interaction [6], [8]. The second problem is polysemy. The adjective «digital» may mean «using computers», «using the internet» or «related to data», depending on the context. The third problem is the creation of new terms to make a conceptual distinction. The term «emergency remote teaching» was proposed precisely to separate a crisis practice from planned online learning [7].

At the same time, the system shows clear hyponymic relations. «Blended learning» and «hybrid learning» are types of combined instruction. «Synchronous» and «asynchronous» learning are types of online learning. «Digital literacy» is often treated as a part of the broader «digital competence» [14]. These hierarchies help to organise the field, but their borders are not always fixed.

Adaptation of Terms in Uzbek. English digital education terms enter Uzbek in three main ways. Table I gives typical examples.

TABLE I. Adaptation of English Digital Education Terms in Uzbek

English term	Formation type	Uzbek equivalent	Adaptation type
online course; webinar	compound; blend	onlayn kurs; vebinar	hybrid; borrowing
distance learning	compound	masofaviy ta’lim	calque
blended learning	compound	aralash ta’lim	calque

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digital literacy	compound	raqamli savodxonlik	calque
e-textbook; e-learning	combining form	elektron darslik; elektron ta'lim	hybrid
LMS; MOOC	abbreviation	LMS; MOOC	borrowing (Latin form kept)
flipped classroom	terminologisation	teskari sinf (variant: ag'darilgan sinf)	calque with competing variants

The first way is direct borrowing with phonetic and graphic adaptation: «onlayn», «platforma», «vebinar», «kontent». Acronyms are usually kept in the Latin form: «LMS», «MOOC». The second way is calque, that is word-by-word translation of the English model: «masofaviy ta'lim» (distance learning), «aralash ta'lim» (blended learning), «raqamli savodxonlik» (digital literacy), «ochiq ta'lim resurslari» (open educational resources). The third way is hybrid formation, in which a borrowed element is combined with a native word: «elektron darslik» (e-textbook), «onlayn kurs» (online course), «elektron ta'lim» (e-learning).

Some terms have several competing equivalents. For «flipped classroom», Uzbek academic texts mostly use the calque «teskari sinf», often with the English term in brackets, but other variants such as «ag'darilgan sinf» and «teskari o'qitish» also occur. For «emergency remote teaching», there is no established Uzbek term. The author suggests «favqulodda masofaviy o'qitish». Such variation shows that the Uzbek system of digital education terms is still being formed.

The results support the view that digital education terminology is better described by communicative and sociocognitive approaches than by the classical approach alone [4], [5]. The classical requirement of «one concept – one term» is difficult to apply in a field where concepts themselves are still changing. The synonymy of «e-learning», «online learning» and «digital learning» reflects real differences in how institutions and researchers understand these practices. At the same time, the findings of J.L.Moore and co-authors show that uncontrolled synonymy makes research comparison difficult [6]. Therefore, some degree of standardisation is necessary.

The comparison with Uzbek shows a typical pattern for terminology in a receiving language. English creates the term, and Uzbek either borrows it or translates its structure. Calques such as «masofaviy ta'lim» and «raqamli savodxonlik» are transparent for Uzbek speakers and fit the national system of terms. Direct borrowings such as «vebinar» and «kontent» are shorter and internationally recognisable, but they may be less clear for non-specialists. This tension between national and international forms is a general problem of Uzbek terminology [12].

The study has practical implications. First, bilingual glossaries of digital education terms are needed. They should give definitions, mark the preferred Uzbek equivalent and list the variants. Second, translators should not treat «e-learning», «online learning» and «distance learning» as interchangeable, because the source text may rely on their difference. Third, in teaching English for specific purposes, students of education and philology should learn these terms in groups, together with their definitions and typical collocations.

The study has limitations. The material is limited to selected sources, and the Uzbek equivalents were not checked in a large corpus. A corpus-based study of Uzbek educational texts would show which equivalents are actually preferred and how quickly borrowed terms are replaced by calques.

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Conclusion. Digital education terminology is a young, open and rapidly developing system. It includes five thematic groups of terms: modes of delivery, platforms and tools, content and resources, competences, and assessment and analysis. Its terms are formed mainly by compounding, combining forms, abbreviation, blending and the terminologisation of general words.

The main semantic features of the system are synonymy, overlapping definitions, polysemy and the creation of new terms to mark conceptual distinctions. In Uzbek, English terms are adapted through borrowing, calque and hybrid formation, and some concepts still have several competing equivalents. Modern linguistics, especially its communicative and sociocognitive approaches, provides the tools for describing this variation. The results can be used in compiling bilingual glossaries, in translation and in teaching English for specific purposes.

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