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Построение онтологии предметной области «Образовательный видеоблогинг»

Введение. Последствия пандемии усилили внимание общественности к цифровым онлайн-технологиям обучения. Последние в форматах подкастов, форумов, стримов, вики, сайтов и видеоблогов активно распространяются и насыщают контент управляемого образования и самообразования, используются инструментально на образовательных платформах, а также становятся самостоятельным образовательным ресурсом. Благодаря цифровизации современного образования получает развитие образовательный видеоблогинг.

Цель исследования – авторская интерпретация онтологии предметной области «Образовательный видеоблогинг.

Материалы и методы. Материалами для выстраивания системы понятий послужили русскоязычные и англоязычные научные публикации, отобранные в соответствии с поисковыми запросами в Science Direct, ResearchGate, Google Scholar и e-library.

Результаты. Результатами исследования стала онтология, включающая четыре уровня анализа. Первый уровень связан с web 2.0, трансформирующимся в web 3.0 и далее в web 4.0. Web 2.0 дает образовательному процессу цифровые онлайн-технологии, а также создает базу для развития видеохостингов и социальных сетей. Второй уровень цифровых онлайн технологий включает текстовые, визуальные и смешанные форматы подачи информации. Управляемое образование и самообразование (третий уровень анализа) составляют базу для образовательного процесса в онлайн-пространстве. И в том, и в другом случае задействованы цифровые онлайн-технологии, которые в управляемом образовании интегрированы в образовательные платформы (LMS, CMS, MOOC). Четвертый уровень анализа сфокусирован на образовательном видеоблогинге, который доминирует в самообразовании. Образовательные видеоблоги различаются по критериям авторства, адресатам и контенту. Смежными с о-видеоблогами категориями являются видеоподкасты и сайты онлайн-школ и педагогов.

Заключение. В результате исследования были выделены базовые понятия видеоблогосферы в целом и образовательного видеоблогинга в частности, выстроена система их взаимосвязей. В дальнейшем онтология может быть расширена за счет исследования разных форматов подачи цифрового материала, а также понятий, связанных с цифровой идентичностью педагогов.

Ключевые слова: YouTube, видеоблогинг, образование, цифровые технологии, цифровизация, учителя-блогеры

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Construction of an ontology for the subject area "Educational video blogging"

Introduction. The consequences of the pandemic have increased public attention to digital online learning technologies. The latter in the formats of podcasts, forums, streams, wikis, websites and video blogs are actively distributed and saturate the content of managed education and self-education, are used instrumentally on educational platforms, and become an independent educational resource. Thanks to the digitalization of modern education, educational video blogging is developing.

Purpose of the study. This purpose is the author's interpretation of the ontology of the subject area "Educational video blogging", which does not claim to be completely exhaustive of this topic.

Materials and methods. Materials for building a system of concepts were Russian-language and English-language scientific publications selected in accordance with search queries in Science Direct, ResearchGate, Google Scholar and e-library.

Results. The results of the study were an ontology that included four levels of analysis. The first is associated with web 2.0, transforming into web 3.0 and then into web 4.0. Web 2.0 provides digital online technologies to the educational process, and also creates the basis for the development of video hosting and social networks. The second level of digital online technologies includes text, visual and mixed formats for presenting information. Guided education and self-education (the third level of analysis) constitute the educational process in the online space. In both cases, digital online technologies are involved, which in managed education are integrated into educational platforms (LMS, SMC, MOOC). The fourth level of analysis focuses on educational video blogging, which dominates self-education. Educational video blogs vary in terms of authorship, recipients, and content. Related categories to E-video blogs are video podcasts and websites of online schools and teachers.

Conclusion. As a result of the study, the basic concepts of the videoblogosphere in general and the educational video blog in particular were identified, and a system of their interrelations was built. In the future, the ontology can be expanded by studying different formats for presenting digital material, as well as concepts related to the digital identity of teachers.

Keywords: YouTube, video blogging, education, digital technology, digitalization, teacher bloggers

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INTRODUCTION

Computerisation and digitalisation of social processes in modern society could not but cause a transformation of the educational environment. The pandemic has had a significant impact on the digitalisation of education, forcing the pedagogues to think about new teaching tools, including online resources. Today's modern educator is required to be digitally competent. UNESCO guidelines describe the teacher's digital competencies in terms of technological literacy, knowledge creation and enhancement [37]. The use of online educational resources and educational platforms allows teachers to follow modern trends and to be in tune with their students.

As part of the revision and implementation of the new education policy, UNESCO held a series of seminars presenting modern experts' views on the development of modern education. J. Salmi, a leading expert in global tertiary (higher) education, noted at the seminar "Beyond the Capabilities – the Ways to Modernise Higher Education" held on 25 January 2023 that, when developing curricula, higher educational institutions should take into account the labour market transformation at the digital age – the changes in the set of skills and qualifications required for efficient work in the modern world [14].

Pedagogical (video) blogging is a new, actively developing trend in the educational space. The Ministry of Education of the Russian Federation took a decision to create a public council of teacher-bloggers which will take part in the discussion of important issues concerning the educational system and develop relevant activities and initiatives aimed at raising the prestige of the teaching profession*. This council has been in existence since August 2022 and has already implemented a number of initiatives aimed at improving teachers' qualifications and developing a system of inclusive education.

Video blogging is one of the communication and content consumption formats that are much familiar to young users, along with podcasts, streams, forums, etc. The accent on communication between the teacher-video blogger and the audience (mainly schoolchildren) will help to identify the peculiarities of educational video blogging as a work tool for school teachers, to study the specifics of perceiving a teacher through his/her video blogging manner, and to analyse the possibility of realising the Russian teenagers' educational needs in the format of teacher's video blog. A modern student goes online to get additional information which sometimes makes up for school gaps or even replaces the information received from the school teacher. Giving preference to the video information presentation format, most students note that they use it to prepare for school classes [1].

In Russian science and practice, the concept of educational video blogs/video blogging is not widely spread and, accordingly, needs operationalisation and constructing links between concepts. Therefore, the purpose of this article is to construct an ontology of the subject area "Educational video blogging".

MATERIALS AND METHODS

The research material is represented by Russian and English-language publications. The Science Direct, ResearchGate and Google Scholar databases were used to select

* "The Public Council under the Ministry of Education supported the idea of setting up a Council of teacher-bloggers" URL: https://edu.gov.ru/press/5259/obschestvennyy-sovet-pri-minprosvescheniya-podderzhal-ideyu-sozdaniya-soveta-uchiteley-blogerov/

English-language publications. The search queries "educational video blog", "educational vlog" were formed; in addition, the publications with simultaneous presence of the word "blog" and one of the following were selected: "teacher", "education", "school", "student" in the title, abstract or keywords. A total of 135 articles were selected from the initial pool of 246 papers.

A set of Russian publications was generated by using a search query "blog AND school" on the e-library platform; the first 200 results were analysed.

To build links between different concepts, four levels of analysis were identified in the course of studying the educational video blog issues in more detail:

1. educational process and web 2.0
2. digital online technologies such as blogs, video blogs, podcasts, wikis, RSS, streams
3. managed education and self-education
4. educational video blog.

RESULTS

The ontology of the subject area is presented in the form of a scheme (see Fig. 1) where links and relations between the terms are reflected through such categories as "is part of" (continuous, unidirectional line), "inherits the features" (dashed line), "complement each other" (continuous, bidirectional line).

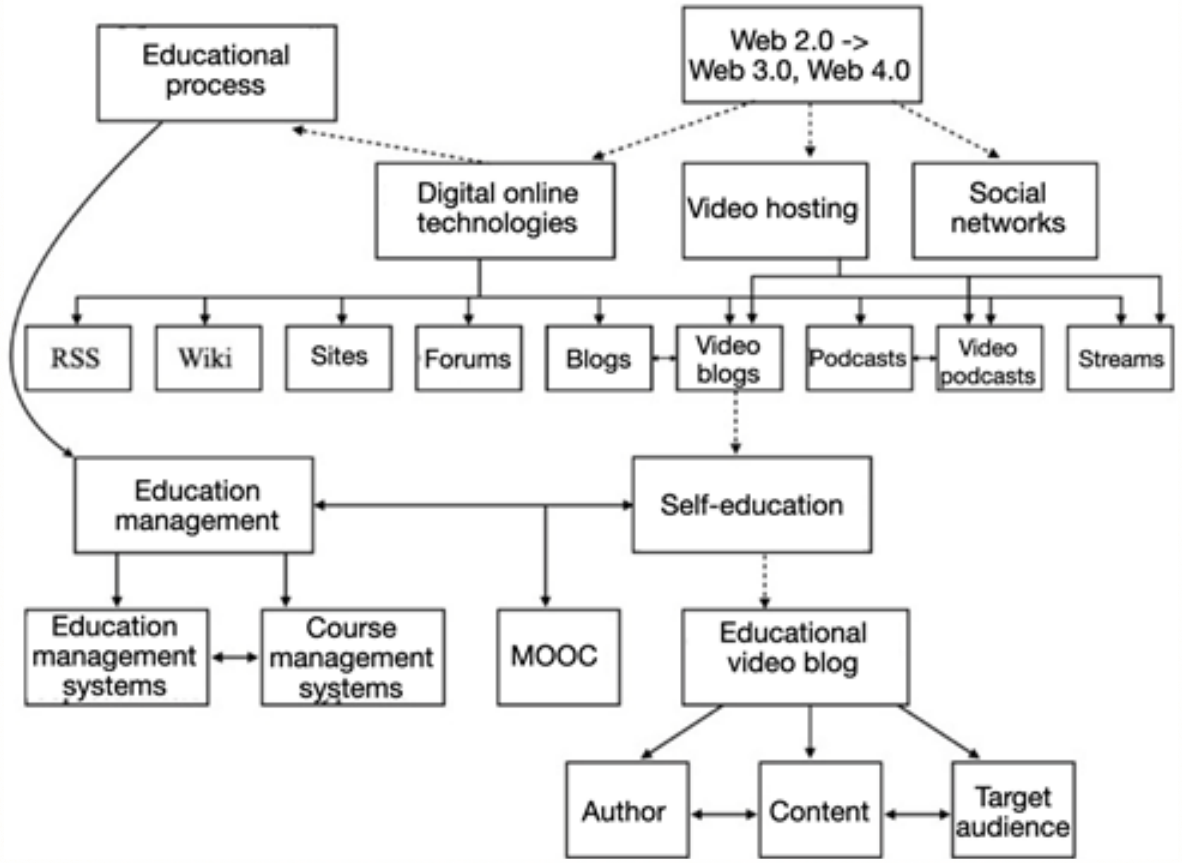

Figure 1 "Educational video blogging" ontology

The first level of analysis

The history of the Internet as we know it and normally use begins globally with Web 1.0 and Web 2.0 technologies. Prior to Web 2.0, all content was produced and posted on the

Web mainly by professionals, “a few – for many”, and it was consumed by ordinary users. The distinction of Web 2.0 is that it is the non-professional users that began to produce the content (texts, photos, videos, melodies, etc.), while consuming it themselves, which means that concrete individuals with their subjective demands and habits are no longer the key figures in the Web, being replaced by the social media. It was these technologies that triggered the rapid development of the video blogosphere and other social media.

Video hosting sites allow users to view, rate, comment, share videos and add them to their favourites. The leading video hosting site for posting and storing videos today is YouTube. It has also become second after Google globally in terms of the number of visitors (1 trillion 2 billion site visitors from May to July 2023)*. The Russian analogue of the international YouTube platform is Rutube – an online service for hosting and viewing videos, which provides a different set of tools for creating and processing video content and supports various blogging and streaming formats**.

The popularity of video content, video blogs in particular, has contributed to the development of technical means for uploading and storing videos in various social media. For instance, the social network “Vkontakte” offers a wide range of multimedia capabilities that combine all kinds of audio, video, text publications, images and polls [10]. A user’s personal account actually becomes a video blog, since the opportunities to “post” information in video format, as well as to post texts and photos, are increasing.

The trends in the educational sphere, such as continuous education, self-education, increased scope of independent work and reduced classroom work, treatment of knowledge as a means for personal development, actualise the use of alternative learning tools and technologies which include digital technologies.

The second level of analysis

Online digital technologies, owing to special equipment or Internet facilities, allow information to be stored, transmitted and processed. The most widespread digital online technologies include websites, (video) podcasts, wiki pages (wikis), RSS, forums, and blogs.

The potential of digital technologies in education is related to the possibility to adapt them, while meeting the challenges of pedagogical activity and transforming learning processes, thus ensuring personalisation of education.

The website is an aggregate of web pages and related content defined by a common domain name. Websites would not carry any functional load without information content. This particular issue was resolved by the creator of the world’s first website – T. Berners-Lee. He successfully developed the concept of URL, as well as the HTTP protocol, and prescribed a programming language which is now known to us as HTML [21].

For instance, a school website allows the users to get acquainted with the official documents of the educational organisation, its teaching staff, logistics and equipment for the educational process, etc. The structure of the official school website is prescribed by the Order of the Federal Education and Science Supervision Service of the Russian Federation No. 831 as of 14 August 2020 “On approval of requirements for the structure of the official website of educational organisations in the information and telecommunication network “Internet” and the information presentation format”***. Starting from 1 December 2022, all

* https://www.similarweb.com/top-websites/

** https://ru.wikipedia.org/wiki/Rutube

*** Order of the Federal Education and Science Supervision Service of the Russian Federation of 14 August 2020 No. 831 “On approval of requirements for the structure of the official website of educational organisations in the information and telecommunication network “Internet” and the information presentation format” https://base.garant.ru/74901486/

state institutions must have official pages in social networks . In order to increase the level of user confidence in the information posted in the school account, a technical possibility to obtain the official status of state organisation became possible (this concerns government-run schools). For this, it is necessary to confirm the account through the Government services portal*.

P. Duffy, A. Bruns discuss in their joint publication the co-constructive activity of users mediated by digital technologies. The researchers conclude that blogs, wikis and RSS make the process of social construction of knowledge visible (visualised). On the one hand, users can be included in the knowledge generation process, for instance, by commenting on a blog or editing wiki pages, and on the other hand, they can follow the knowledge creation process through texts and videos [27].

RSS stands for Really Simple Syndication, which can be literally translated as "very simple acquisition of information". In a broad sense, RSS is a technology providing a possibility to receive news without visiting the websites that publish it. The user just needs to subscribe for an RSS newsletter which creates an illusion that "you do not go to websites; instead, websites themselves come to you" [8]. This technology gave a certain impetus to the development of the blogosphere when Google Reader was created in 2005. This was an instrument that made it possible to unite blog services located on different servers and owned by different people into a single entity [35].

The term "wiki", to describe a website, was first used in 1995 by Ward Cunningham, developer of the first wiki system, WikiWikiWeb, "Portland Sample Repository" of software codes [25] created on 25 March 1995, that borrowed the word "Wiki", meaning "fast", from the Hawaiian language**. The core of the wiki technology lies precisely in the technical possibility of creating and editing material on a collaborative basis. For instance, a wiki facilitates an informal exchange of opinions along with students' organised group work [17]. Wiki has the potential for activating the cognitive process, development of communicative competencies, self-learning and practical application of acquired knowledge in HTML [9]. In addition, Wiki is used to develop research projects, create annotated bibliographies, training course resources (assignments) and e-learning content, with the possibility of commenting on the above, etc. [23; 23].

Discussion forums represent asynchronous communication according to the scheme "by many – to many", providing communicators with an opportunity to create topics in dedicated sections for subsequent discussion [5]. Although the described format envisages a time interval between response phrases of dialogue participants, this type of activity is quite intensive, since in order to respond to questions of other participants, it is necessary to prepare in advance. The format of a forum significantly simplifies the process of learning communication and formulating one's position for those who find it difficult to express themselves in a spontaneous synchronous discussion.

The next block of digital online technologies includes technologies with a visual component, the technologies that use videos – podcasts, streams and video blogs.

Originally, podcasts – a term developed shortly after the introduction of the Apple iPod and based on the combination of the terms "iPod" and "broadcast" – meant the method of distributing digital audio or visual material over the Internet with its further downloading to a mobile phone or other mobile device. A podcast usually has a common theme and consists of more or less regular episodes that can be subscribed to for regular downloading

* https://vk.com/faq19973

** https://vk.com/wall6140252_13560

as they become available. It is possible to subscribe to a programme that uses podcasts [26]. Since the development of podcasting was connected with the development of the MP3 audio format and digital audio players, originally these were audio podcasts.

Screencasts represent a kind of video podcast – a video recording of a computer screen (or other digital device) accompanied by sound effects and/or text comments [13].

A stream (borrowed from English) is a sequence of videos or audio received by a user through the data streaming method. This term is also used by Internet users as a slang name for live broadcasts on video hosting sites [3]. Webinars and streams are synchronous formats that provide up-to-date information in real-time. The audience has an opportunity to react to broadcasted information by feedback from the presenter and communicating with each other. Streams on YouTube, Vimeo, Facebook, etc. can gather a lot more viewers than the webinar platform allows; lengthy broadcasting and high-quality images are duly provided.

The concept of "video blog" is a derivative of the "blog". When defining a blog, the researchers appeal to the English "blog" or "weblog", which means an Internet journal or an online diary [6; 7]. The content of a blog comprises regularly added entries containing texts, images or multimedia.

Blogs are characterised by quite short entries sorted in reverse chronological order [4]. Although all researchers define a blog as a personal diary, the main distinction between a blog and a personal diary is its publicity. The format of a blog presupposes the participation of third-party readers who can enter a public polemic with the author, add their comments or write a reply post to the author's statements. That is, a blog can be redefined as a personal diary for public reading.

A foreign researcher John Warmbrodt defined video blogs as "blogs where every post is a video" [39]. Whereas previously video blogging, as an information broadcasting format, was a domain of specific platforms and hosting, today, at the current stage of online space development, practically all platforms and social networks (VKontakte, Telegram, TikTok) use videos as published information on a par with the text format. The use of video provides video bloggers with greater freedom to express their opinions/views and for direct, conversational interaction with the users.

Thus, at the present stage of development of the video blogosphere and video blogging, the video blog in general should be understood as a user's personal Internet resource with systematically uploaded posts, which fully or partially comprise video material.

The third level of analysis

Digital online technologies and tools in education give rise to new digital formats of the educational process. For instance, blended learning involves the integration of traditional, formal learning elements and instruments with digital tools and technologies. In this case, learners are necessarily in contact with the teacher, but the activity of this interaction depends on a chosen educational model. Mobile learning involves the use of mobile devices for the acquisition and consolidation of knowledge, creation of information, and performing a plenty of tasks through the use of programmes and applications, mobile and wireless networks.

Along with managed education based on digital platforms and applications, users can engage in self-education, customising the content and pace of learning to suit individual needs.

Digital technologies provide for efficiency of the educational process through the use of active learning techniques, different methods for intensification and optimisation of information, and activation of learners' subjective position.

The technological basis of modern education is formed by the Learning Management Systems (LMS) and Course Management Systems (CMS). M. Laanpere, K. Pata, P. Normak [30] described the ongoing generation shift in the technical education learning systems (TEL), arguing that the closed and static learning management systems pertaining to the second generation will be replaced by open and evolving third-generation digital learning ecosystems (web 3.0).

Berking notes that LMSs are characterised as enterprise-level server software systems and are used to manage and deliver (via a web browser) multi-level learning, particularly e-learning. They represent a key technology that enables access to learning content and administration "anytime and anywhere" [20].

Learning and course management systems are more commonly used for online or blended learning, tracking students' progress, storing students' learning materials and work results, and communication.

CMS and LMS are identified by researchers in a different way. For instance, Moodle is defined in one publication as a course management system [19], and as a learning management system [37] in another work. Some researchers consider CMS as part of LMS [40]. S.H. Alshammari, M. Bilal Ali, M.S. Rosli point to the need to distinguish between LMS and CMS, although these systems are similar in content [16].

For the purpose of this study, LMS is hereby defined as an educational platform that makes it possible to organise a learning process at different stages, from different positions, including automated management and realisation of administrative functions by the educational organisation towards ensuring systemic online learning. At the same time, the course management system is an educational platform that opens opportunities for online learning, but more often – for blended learning; it realises the functions of conveying the learning material to students; it is not designed for systematic learning and does not realise organisational (administrative) tasks.

H. Coates, R. James, G. Baldwin point as well to such features of LMS as a combination of synchronous and asynchronous communication (online ads, e-mail, chatrooms, emailing, instant messaging services, discussion forums); content development and delivery (learning resources, learning objects repositories, links to Internet sources); evaluative (ongoing) and summative assessment of students' progress (testing of all types, collaborative work, feedback); class and user management (registration, enrolment, scheduling, managing student activities and electronic work hours) [24].

LMSs use a variety of tools for educators' communication with learners and learners' interaction with each other – online discussion boards, wikis, blogs, chatrooms, forums, e-mail, ads and groups).

Another opportunity for online education is provided by public open online courses – digital platforms with a huge number of educational materials, courses and lectures. MOOCs ("massive open online courses") represent educational platforms with a user-friendly online learning interface and materials from experienced teachers and specialists, as well as online technologies and digital education tools.

There exist specialised MOOC platforms such as Coursera, Udacity and Open edX. Moodle, one of the most popular open-source learning management systems (LMS), was also used for the realisation of MOOCs [32].

The next level of analysis is represented by the educational video blog – the one created by a person related to education. The author of a blog may or may not be related to an

educational organisation. In the first case, it will be a professional educational video blog, in the second case, it will be an informal one.

The professional educational video blog will be hereby treated as a video blog that distributes some educational content and necessarily contains information about the author's professional affiliation to the sphere of education (school teacher, a teacher at a professional educational institution, etc.). Thus, this criterion for classifying video blogs will be defined as authorial, which means that defining a video blog as professional is indicative of the fact that the author of the video is a professional educator.

L.S. Naumenko defines the teacher's blog in her work as "a teacher's website created and used by the former, that allows posting textual, numeric, graphic, audio and video information for informational interaction between the participants of the educational process" [11]. The teacher's personal website is an important element of the educational process, an instrument for improving the quality of education, and a means for the formation of informational and communication culture of educational process participants. The creation of a personal website enables the teacher to present his/her experience, acquire due skills of distance work with students, and increase his/her level of IT competence, which is one of the important elements of a modern teacher's qualification level [12].

The educational organisation can also serve as a translator of educational or training content into the network. In this case, the ed-blog/site becomes a communication channel for students, parents, teachers and administration of the educational institution. Educational blogs maintained by organisations also handle marketing tasks of attracting an audience and, consequently, potential students.

Hereby it is proposed to distinguish between the concepts of a (video) blog and a website of an educator or organisation. In addition to the ways to present information, the difference between a website and a blog lies in the technical peculiarities of content placement. A website is a set of publicly accessible interconnected web pages that use the same domain name. Meanwhile, video blogs are posted on special video hosting sites or in social networks.

Talking of educational content in corporate accounts, it is necessary to note the websites and accounts of online schools. Online schools are legal entities that provide paid or free educational services based on distance learning technologies implemented with the use of information and telecommunication networks*. Like many other elements of information and communication technologies in education, online schools gained recognition in the market of educational services during the pandemic period. E.Ya. Sheinin, A.A. Agajanian, O.I. Galenko give the following reasons for the increased interest in this type of education: economic benefits, the ability to combine learning with other activities, and psychological comfort [14]. As a rule, online schools prepare students for examinations or directly engage in education in line with established educational standards.

Taking the criterion of content, educational blogs can be divided into instrumental and resource-based blogs. The former become an instrument (technology) of the educational process, while the latter contain a variety of educational resources. An example of instrumental blogs is educational blogs, when schoolchildren have an opportunity to interact with their peers and hone their self-presentation skills. Video blogging encourages self-reflection – viewing oneself from outside. This is successfully used not only in working with

* Article 16. Realisation of educational programmes with the use of electronic learning and distance education technologies. From Chapter 2 "Educational System" of the Federal Law No. 273-FZ as of 29.12.2012 (amended on 30.12.2021) "On Education in the Russian Federation" (with amendments and supplements enforced on 01.03.2022) [Electronic resource] // Codes and Laws of the Russian Federation: legal navigation system. URL: https://www.zakonrf.info/zakon-ob-obrazovanii-v-rf/16/

schoolchildren but also in training future teachers. Gradually, a transition from reflective monologue to reflective dialogue takes place in video blogging, and the student is perceived not as a passive consumer of the educational product but its active creator [29].

Resource-based educational blogs accumulate useful content, providing a user with an opportunity to obtain particular information and develop a particular skill. Usually, this ed-blog format attracts motivated users who clearly understand what content they need and why. Resource ed-blogs, like all blogs, are interested in users and use multiple tools to popularise and promote the authorial content. However, they are inherently less oriented towards user interaction, giving users more freedom to learn and master educational information.

Ed-blogs can be differentiated by the target audience – it can be represented by students, other teachers (professional community) or a broad audience, in which case their task is predominantly to popularise knowledge. B.B. Andersen distinguishes the following blogs: a tutor blog, a learner blog, and a class blog [2]. A. Bartlett-Bragg singles out academic scholarly blogs from other types of blogs used in pedagogical practice [18]. Teacher blogs create a due environment for pedagogues' professional identity formation and development, which is a due environment for professional development, sharing experience and methodological documents [22; 28].

DISCUSSION

The ontology of the subject area "Educational video blogging", compiled on the basis of foreign and Russian scholarly publications, illustrates the history of the origin and development of educational video blogging and differentiates this notion from the concepts related to it, such as streams, podcasts, etc.

Online digital technologies have brought significant changes to the educational process, shifting the accents not only towards the development of digital skills in adults and children but also towards learners' self-reflection and enhancing their role in the process of acquisition and assimilation of new knowledge. This is confirmed by the findings of various studies devoted to educational video blogs as a pedagogical technology. Video-based blogs have a great potential for improvement of students' performance since they provide more opportunities for online learning, interaction with peers, perfection of oral presentation skills, self-reflection, etc. [33; 35].

When building the ontology of the given subject area, the authors encountered a variety of interpretations of different concepts. Often these research approaches contradict each other, like, for instance, in the case of defining "learning management system" and "course management system". The high mobility and changeability of the video blogosphere, and the transition from web 2.0 to web 3.0 and further to 4.0 cause difficulties in identifying and describing the digital environment phenomena. The video blogosphere is constantly replenished with new video blogs, including educational ones. The authors agree with the opinion of Lankshear and Knobel who identify 15 different types of blogs and note that the latter are continually mutated and hybridised [31].

The obtained findings led the authors to revise the role and place of the school in the system of social institutions and its mediating influence on graduates' subsequent educational process and professionalisation. This is consistent, for instance, with a survey by W. Richardson who treats the school as representing "nodes within larger, continually

extending personal education networks", concluding that the school "helps students to create, edit their learning networks and participate in them" [36]. Upon leaving school, graduates continue to maintain their learning networks, build effective communications and plan their further development and self-education.

The present research made it possible to identify certain gaps in the interpretation of such important terms pertaining to educational video blogging as target audience, ed-blogger, ed-blog types, and others. Relying on the empirical material already collected by the authors within the framework of the given project (texts of schoolchildren's focus groups, expert interviews with teachers-video bloggers, and a selection of educational video clips), the authors offer definitions for resource-based, instrumental, professional and informal educational video blogs.

The video blogosphere is continually changing, and the authors' task was to capture its diversity at the current moment by identifying the basic concepts and tracing their interrelations, including hierarchical links.

CONCLUSION

Digital technologies are actively introduced into the educational process. Among other skills, modern educators are expected to have digital literacy skills to be gained through mastering digital learning technologies and integrating them into the educational process.

The construction of the given subject area ontology aims at terminological clarification of the main digital online learning technologies with an accent on educational video blogging. Online schools and video blogs are mostly free of institutional pressure, provide freedom for students' creativity and self-expression, and involve them in educational networks that are still preserved after the completion of a new regular level of education.

The description of the ontology presents the authors' approach based on the analysis of foreign and national scientific publications as well as the analysis of video blogs and expert interviews with ed-bloggers. In the future, the ontology can be extended through the use of different digital-material presentation formats, for instance, digital storytelling, as well as the concepts addressing educators' digital identity.

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