ISSN: 2414-0325. Open educational e-environment of modern University, special edition (2019)

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USING VIDEO MATERIALS IN ELECTRONIC LEARNING COURSES

Abstract. Video materials belong to the most powerful tools in educational process because they provide learners simultaneously with auditory and visual information. Thus, according to the Edgar Dale's cone of learning they are more effective than classical classroom lectures, reading textbooks or listening to podcasts. Moreover, video as a part of a learning routine appeals better to modern students who are used to gaining knowledge from digital sources. The article presents data on video materials implementation into an electronic learning course (ELC) of a university both as a part of distant learning system and for providing information for flipped learning process. In addition, the question of using videos in the classroom is given attention. The article also deals with peculiarities of educational video design considering psychological features and studying patterns of modern students who mainly belong to z-generation. That is why microlearning is considered as a successful distant learning implementation method for the above mentioned purposes. Video materials for microlearning should not be more than 15 minutes long, should have clearly structured information and involve student into the learning process. There are different types of videos used in ELC such as introductory videos, video lectures, video instructions, additional materials videos, interactive videos. In spite of variety of the content all types of video materials undergo the same design procedure with the following steps: splitting materials into logically completed parts, defining notions, writing meaningful questions, structuring components of the video etc. Designing a video for an electronic learning course must be a carefully planned process to ensure high quality of a finished product. Preceding and following activities also have to be designed to receive maximum outcome from the course.

Keywords: video materials; electronic learning course; distant learning; z-generation students; microlearning; cone of learning; higher education

Introduction. The latest main educational trends are implementation of e-learning and distant learning technologies in all modes and fields of study, e-learning courses and other types of e-learning content design, standardization in the sphere of electronic content and e-learning environments design and global change from Learning Management Systems (LMS) to Training Management Systems (TMS) (Morze, Buinytska, Varchenko-Trotsenko, 2016).

Today a lot of learning materials are placed in public domain. Their analysis allows to consider two ways of their utilization – content and serviced. Content includes designed learning video, visualization and presentations scenarios, prepared questions and tasks. Services imply utilization of content design modules and technical part itself, that is wrapping up for the content that is to be delivered to a recipient, where e-learning courses belong as well. There are some pending questions left. What services have to be considered in the process of learning

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content design? What technologies should be used to boost students' motivation for learning and to provide learning process quality?

That is why in Borys Grinchenko Kyiv University we pay attention to e-learning implementation where electronic content (e-content) is used including e-learning courses (ELC) and electronic collaboration (e-collaboration) technologies of all participants on the basis of designed electronic informational learning environment of the University. One of the ways of e-content integration into ELC is creation of video materials.

Analysis of recent studies and publications. The question for video design and utilization in learning process is addressed in researches of Abramova I., Zimin A., Meshcheriakova A., Nozdracheva V., Norenkova I., Seitveliieva S., Tabakova V. and others. The microteaching method is partly highlighted in publications of Avramenko K., Vitvytska S., Semerikova S., Starosta V., Cherednychenko L., Shcheglova E. and other scientists.

The article's goal is to determine peculiarities of creation and utilization effective video materials in ELC to support electronic informational learning environment of the University.

Recently concept of teaching in higher education institution has been changing from teaching aimed at theoretical materials exploration where a teacher is the main source of informational data to practice-oriented teaching, active involvement of students into educational process where students' needs and peculiarities of teaching z-generation students are considered such as digital technologies and devices utilization and different cognitive learning styles. Existent labor market sets for higher education the task to train a modern, creative, mobile graduate who has a complex of щoccupational key competencies and is ready to effectively perform their professional activities in the conditions of globalization and informatization of all spheres of the society.

Teachers use multimedia technologies to provide students with learning materials and let their students learn without time or place limitations. Students are taught to search for and choose required data to prepare for their classroom lessons, and it is expected that they will be more active and responsible for their own learning process.

Learning videos allow students to watch educational content as many times as it is necessary for gaining deep basic knowledge.

Digital learning multimedia materials are easy to store, watch, change and transfer.

In the process of preparation for implementation of flipped learning teachers are able to check and demonstrate in free access for all students a curriculum, tasks and requirements for learning outcomes and their assessment, to constantly improve pedagogical design of students' activities and learning content.

Having sufficient level of basic knowledge on the topic students have more time for active learning, formulation and discussion of own questions, determination of practice-oriented problems and their joint solution. Under such circumstances teachers are able to provide individual consultations which help students with their difficulties in the learning process.

Activeness and discussion in the classroom can raise the level of collaboration between students and teachers. Active atmosphere can boost students' motivation for learning and educational effect will grow thanks to collaboration with co-students.

Educational effect in modern higher institution has to be built on the basis of innovational pedagogical technologies utilization including digital technologies. There is specific interest to video in particular on the basis of scientific research in the field of pedagogical design and pedagogical psychology. At the end of 1960s Edgar Dale, a famous researcher, gave his students the same learning material in different ways. After that he analyzed the students' abilities to recreate received information. As a result, he came to the following conclusions:

- Listening to lectures and reading materials on a required topic are the least effective ways of uptake of content;

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- Practice-based learning and using gained knowledge is the most effective method to learn anything.

The results of the conducted analysis were presented as a scheme that was titled "Edgar Dale's Cone of Learning" (Fig. 1). It was constructed on the basis of the scientist's research results, but the percentage was added by his followers who carried out their own researches (Korchanov, 2008).

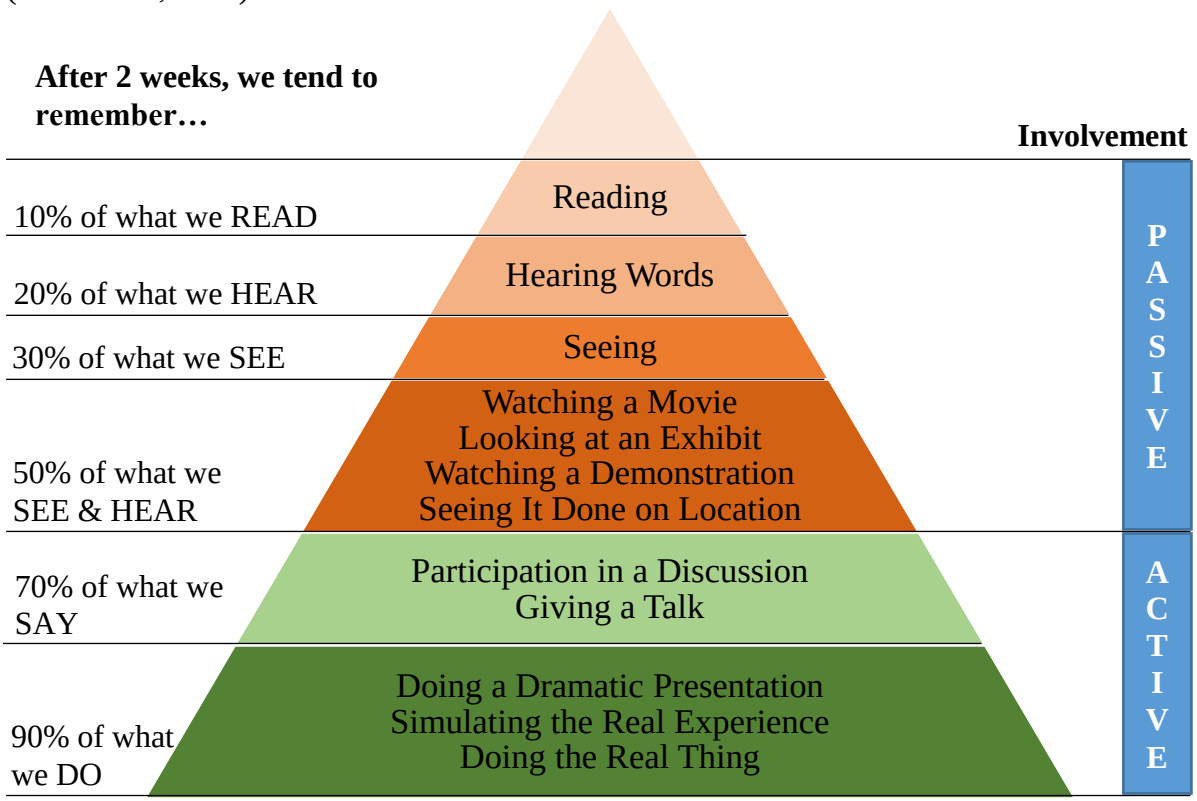

Fig. 1. The Cone of Learning (Edgar Dale)

This scheme helps to understand, for example, why video is perceived and remembered by a person better than a book or a podcast as human's brain perceives audial and visual information fragments simultaneously more effectively.

Works by Naumov Volodymyr supplement the above mentioned researches. In his opinion, knowledge presented in a distant course can be classified into several types:

1. Objective. That is data about defined objects, their qualities and interplay.
2. Conceptual. Here general description of system objects is considered (notions, classifications, principles, generalization, theories, models, etc.). Their past, present and future states are considered.
3. Procedural. It is a description of the method and procedure of objects manipulation and their transformation.
4. Pragmatic (competency based). Determination of the degree of application adequacy of objective, conceptual and/or procedural knowledge towards circumstances, norms and values (Naumov, 2012, pp. 25-27).

And if we accept that static images can be a form of reconstitution of conceptual and partly objective knowledge, then an optimal format of presenting procedural knowledge will be video, of course. Thanks to visualization of content (video or other digital learning materials) representatives of Z-generation, where modern students belong, are able to watch educational material anywhere and as a result learn it better (Morze, Smyrnova-Trybulska, Umryk, 2015). Most students have mobile smart-gadgets and according to the statistics 92% of students use

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their devices in educational process (Payne, 2013). Learning tasks can be diversified with the help of digital media materials which are placed on an education platform of a university including those with the help of ELC in LMS. Types of video in ELC are presented in Fig. 2.

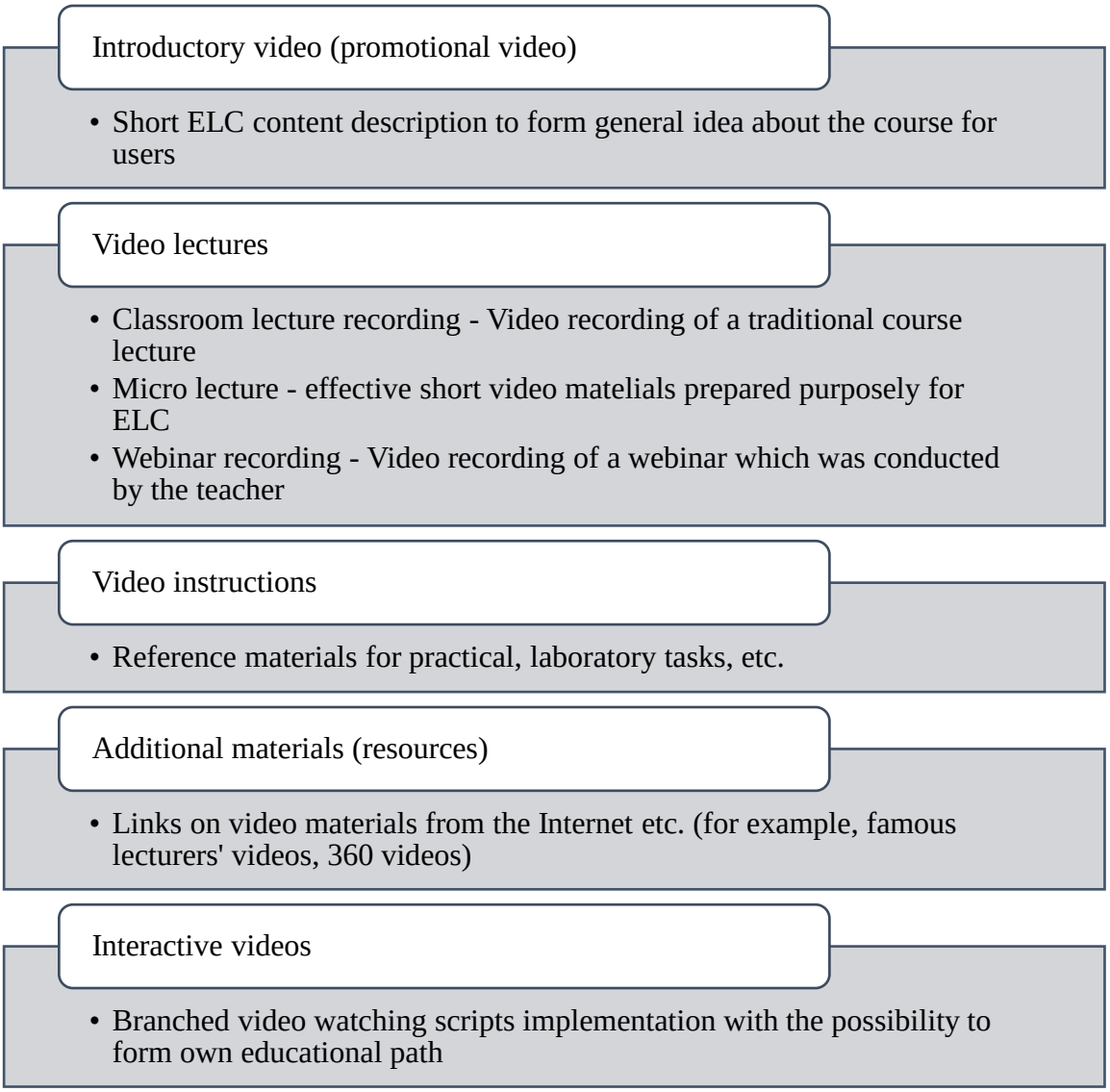

Fig. 2. Types of video in ELC

As examples of educational videos can serve:

- Lecture recording
- Recording in a studio
- Video scribing
- Video infographics
- Video animation
- Screencast
- Video demonstration
- Webinar recording
- Video timeline, travel, scaling
- 3D visualization, video 360°
- Dialogs, slideshow

Successful learning with the help of video can be fulfilled using ELC based on

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microlearning.

To the peculiarities of microlearning belong (Sanal, 2018): learning content division into micro modules 5-10 minutes each which provides students with a possibility to gain knowledge faster; possibility to study in convenient time and in any place; rise of motivation for learning though simplicity, little time required and building learners' confidence; less time for preparation both for a student and for a teacher. Advantages of microlearning are easily updated content, profitability increase, students' knowledge gaps determination and filling, possibility to react quickly on learning materials change depending on the students' feedback received in the educational process, speedwork.

One of the most important issues for creating high-quality video materials by teachers is that general concept of learning video materials design required. Video materials are an effective instrument as learners receive data through two channels – auditory and visual. Important factors are video content (completed part of learning material), duration (optimal for perception) and type (text data, infographics, speaker recording etc.). Let us define components of a qualitative video: a duration up to 6-15 minutes, a completed educational idea that corresponds the learning goals, a natural pace of speech, an interesting content delivery based on an outlined problem with the help of inquiry based questions formulation. After each video with completed idea students are offered to answer several questions. The questions support all three stages of educational process: they serve as a guideline at the beginning, as a self-check method in the studying process and as a possibility to assess own results at the end.

In his lecture for the Harvard initiative on teaching and learning Professor Mayer R. gives advice which have to be considered while creating a video ("How to create video for an online course", 2019):

- Utilize visual materials, but avoid extra detailing.
- Highlight the main ideas. For example, make keywords in bold if you display a text on the screen.
- Combine auditory and visual data. For example, animation is perceived better when supported by oral explanation than by a text form. In addition, it is necessary to explain the material simultaneously with the animation or the image emergence, but not after that.
- Personalize. Materials should be delivered in the form of a conversation with spectators.

Let us determine steps of theoretical data for ELC preparation which will serve as a basis for video materials creation:

Step 1

1. Select main notions of an electronic lecture.
2. Build a logical scheme for the notions.

Step 2

1. Divide a lecture into completed logical parts.
2. Formulate meaningful questions to each part.
3. If a meaningful question applies to main notions, processes, objects of the discipline, place it into the list of questions to the lecture.
4. Place a meaningful question at the beginning of the correspondent part of the lecture.
5. Change the meaningful question into a problem-based question.

Step 3

1. Divide your lecture material into main and additional.
2. Additional material place at the end of a lecture in the form of links.

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3. Titles of all formulated questions place at the beginning of a lecture – trey will form its structure.

Step 4

1. Choose a separate part of a lecture.
2. Highlight:
   a. Definitions. Copy definitions to the glossary. For new notions create links in the glossary.
   b. Examples: Insert links.
   c. Processes: Build a diagram.
   d. Comparisons: Build a diagram.
3. Read the remained text attentively. Take away connecting words which are used in the written form and speech patterns
4. Change complex sentences into simple sentences.

Step 5

1. Place internal links into a lecture.
2. Place necessary images and graphics into a lecture.
3. Find e-resources and formulate a list of e-references.

According to the principles of microlearning every ELC has to consist of learning sessions and every learning session contributes to successful implementation of educational process. For this purpose, preparation of ELC sessions suggests designing an introduction, an active learning stage and a closure ("Microlearning – small steps to great results", 2017).

Conclusions. Utilization of video materials in electronic learning courses of a modern university allows:

- to present learning material with a high level of visualization;
- to raise students' motivation through demonstration ways of using learned information in practice;
- to widen potential of educational process individualization;
- to ensure wide field of contacts with all participants of an educational process;
- to provide wide possibilities for active individual work of students;
- to improve practical orientation of educational process by stimulated events and using video fragments on practical and seminar lessons both as educational material and as a result of performing practical tasks.

All video materials must be designed considering cognitive features of modern students who frequently switch their attention and read less which means that videos have to be short. Also a teacher has to be ready to create high quality video materials and be able to organize electronic collaboration and communication of students.

Prospects for further research. Research of readiness of academics to use video materials for different disciplines and design of methodology for using flipped learning in educational process while distant learning technologies implementation can be considered.

ACKNOWLEDGEMENT

The research leading to these results received, within the framework of the Modernization of Pedagogical Higher Education by Innovative Teaching Instruments. MoPED – KA2 CBHE – 586098-EPP-1-2017-1-UA-EPPKA2-CBHE-JP. This project is funded with the support of the European Commission. This publication reflects the views only of the author, and the

ISSN: 2414-0325. Open educational e-environment of modern University, special edition (2019)

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ВИКОРИСТАННЯ ВІДЕО-МАТЕРІАЛІВ У ЕЛЕКТРОННИХ НАВЧАЛЬНИХ КУРСАХ

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Анотація. Відео-матеріали належать до найпотужніших інструментів в освітньому процесі, оскільки вони забезпечують одночасне сприйняття учасниками навчання аудіальної та візуальної інформації. Тож, відповідно до конуса навчання Едгара Дейла, вони є більш ефективними, ніж класичні аудиторні лекції, читання підручників чи прослуховування подкастів. Більш того, відео як частина навчальної рутини більше імпонують сучасним

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студентам, які звикли отримувати знання з цифрових джерел. Дана стаття розглядає дані щодо впровадження відео-матеріалів у електронний навчальний курс (ЕНК) університету як частину системи дистанційного навчання і як джерело забезпечення інформацією при застосуванні технології перевернутого класу. Крім того, звертається увага на використання відео у аудиторії. Стаття також розглядає особливості створення навчального відео, враховуючи психологічні особливості та навчальні звички сучасних студентів, які здебільшого належать до z-покоління. Тому надається перевага мікронавчанню як успішному методу впровадження дистанційного навчання для вищезазначених цілей. Відео-матеріали для мікронавчання не повинні бути довшими за 15 хвилин, а також мають бути чітко структурованими та залучати студентів до процесу навчання. Існують різні типи відео, що використовуються в ЕНК, такі як вступне відео, відео-лекції, відео-інструкції, додаткові матеріали, інтерактивні відео. Не зважаючи на різноманітність контенту, всі відео матеріали проходять однакову процедуру створення, що включає: поділ матеріалу на завершені частини, визначення понять, написання змістових питань, структуризація компонентів тощо. Створення відео для електронного навчального курсу має бути чітко спланованим процесом, щоб забезпечити високу якість вихідного продукту. Також мають бути створені завдання, що передують та слідують за відео для отримання максимальної віддачі від курсу.

Ключові слова: відео-матеріали; електронний навчальний курс; дистанційне навчання; студенти z-покоління; мікронавчання; конус навчання; вища освіта

KA2 CBHE – 586098-EPP-1-2017-1-UA-EPPKA2-CBHE-JP This project has been funded with support from the European Commission. The content of the article reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.