VR-TOUR AS THE FORM OF STUDYING ENGLISH GRAMMAR AND LEXIS

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The paper investigates the problem of virtual technologies introduction into the English language teaching at the educational institutions of Ukraine. Aim of research is to reveal the possibilities of implementing virtual tours in teaching English as a foreign language and to propose the complex of virtual tours for studying English grammar and lexis to applicants for general secondary and higher education. The methods used to achieve the research goal were theoretical (analysis and synthesis). The types of virtual technologies and the main means of virtual reality (hereinafter – VR) are named in the article. The author gives the hypothesis that a VR-tour as a form of teaching English in educational institutions can be effective in teaching English as a foreign language. According to the author's point of view on the division of types of VR-tours for learning English as a foreign language at educational institutions, there are such types of VR-tours: according to the content – survey, thematic, educational; according to the number of participants – individual, pair, group, collective; according to the VR technologies used – full-immersion VR-tours, VR-tours without immersion, VR-tours with shared infrastructure; according to the means used in their creation – high-tech, medium-tech, low-tech VR-tours.

The complex of VR-tours for teaching English grammar and lexis in educational institutions is proposed. It consists of two parts according to the way of their creation, namely: Part 1 (teacher's and students' creation) – The use of VR-tours based on online platforms (such as Google Earth or similar Google Earth Plus/Pro/Engine, Mapillary, Tour Builder, Historypin, Tour Creator), in particular, VR-tours visiting geographical locations to consolidate lexical-grammatical material, VR-tours of the overview and description of monuments and sights, VR-tours to Mars and the Moon, VR-tours by the teacher's instuctions and commands, VR-tours along a route planned before by the applicant or a group, VR-tours as a trip along an improvised route; Part 2 – Using already existing online VR-tours for studying English grammar and lexis: VR-tour "Ukrainian open-air museums" (to 7 authentic museums of Ukrainian culture and life, Ukraine), VR-tours to Art Museums and to Natural History Museums (USA and UK). The proposed by the author complex of the VR-tours can be used to teach English lexis and grammar in all the kinds of institutions of general secondary education and of higher education. The prospects of the research are seen in the pedagogical experiment of using VR-tours in teaching English grammar and lexis.

Keywords: *virtual tour, virtual reality, foreign language teacher, training learners, studying English, grammar, vocabulary, language competence.*

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Zhytomyr Ivan Franko State University Journal. Pedagogical Sciences. Vol. 4 (115)

Вісник Житомирського державного університету імені Івана Франка.
Педагогічні науки. Вип. 4 (115)

ВІРТУАЛЬНИЙ ТУР ЯК ФОРМА НАВЧАННЯ ГРАМАТИКИ ТА ЛЕКСИКИ АНГЛІЙСЬКОЇ МОВИ

Н. Ю. Сердюк

*У статті досліджено проблему впровадження віртуальних технологій у викладання англійської мови в закладах освіти України. **Мета дослідження** – розкрити можливості впровадження віртуальних турів у викладанні англійської мови як іноземної та запропонувати комплекс віртуальних турів для вивчення граматики та лексики англійської мови здобувачам загальної середньої та вищої освіти. **Методи досягнення** мети дослідження були теоретичними (аналіз та синтез). **Результати і обговорення.** У статті названо види віртуальних технологій та основні засоби віртуальної реальності. Автор висуває гіпотезу про те, що віртуальний тур як форма навчання англійської мови в закладах освіти може бути ефективним у викладанні англійської мови як іноземної. Відповідно до точки зору автора щодо поділу типів віртуальних турів для вивчення англійської мови в закладах освіти, виділено такі види віртуальних турів: за змістом – оглядові, тематичні, навчальні; за кількістю учасників – індивідуальні, парні, групові, колективні; за використовуваними віртуальними технологіями – з повним зануренням, без занурення, зі спільною інфраструктурою; за засобами, використаними при їх створенні, – високотехнологічні, середньотехнологічні, низькотехнологічні віртуальні тури. **Висновки.** Запропоновано комплекс віртуальних турів для навчання граматики та лексики англійської мови в закладах освіти. Він складається з двох частин відповідно до способу їх створення, а саме: Частина 1 (створені педагогом та здобувачем) – Використання віртуальних турів на основі онлайн-платформ (таких як Google Earth або аналогічних Google Earth Plus/Pro/Engine, Mapillary, Tour Builder, Historypin, Tour Creator), зокрема віртуальні тури з відвідуванням географічних місць для закріплення лексико-граматичного матеріалу, віртуальні тури огляду та опису пам'яток і визначних місць, віртуальні тури на Марс і Місяць, тури за вказівками та командами педагога, тури за заздалегідь спланованим здобувачем/здобувачами маршрутом, тури у вигляді подорожі за імпровізованим маршрутом; Частина 2 – Використання вже існуючих онлайн віртуальних турів для вивчення граматики та лексики англійської мови: віртуальні тури "Українські музеї під відкритим небом" (7 автентичних музеїв української культури та побуту, Україна), тури до Художніх музеїв та природничих та історичних музеїв (США та Великобританії). Запропонований автором комплекс віртуальних турів може бути використаний для навчання лексики та граматики англійської мови в закладах загальної середньої та вищої освіти. Перспективність дослідження вбачається в педагогічному експерименті використання віртуальних турів у навчанні граматики та лексики англійської мови.*

__Ключові слова:__ віртуальний тур, віртуальна реальність, учитель іноземної мови, підготовка учнів, вивчення англійської мови, граматика, словниковий запас, мовна компетенція.

Introduction of the issue. Under the conditions of russian invasion, the state of educational process in Ukraine is characterized by increasing needs of implementing innovative approaches, methods and means to teaching educational components, in particular, English as a foreign language. We consider virtual reality, which is identified as a "simulated experience that employs pose tracking and 3D near-eye displays give the user an immersive feel of a virtual world" [12], to be one of the modern technologies that can interest and motivate young people to learn English.

Minding the fact that supporting the active implementation of innovations into the education sector of Ukraine became one of the priority areas of the state strategy [3], the author made the hypothesis that the introduction of virtual tours into the English language teaching to applicants for general secondary and higher education could be interesting and effective in studying English grammar and lexis. Considering all the above, the chosen topic of research is actualized.

Current state of the issue. According to the fact that "the more intensive the development, the more often there is a need to develop and implement new systems and technologies" [5: 174], in order to modernize the process of teaching foreign languages we need to create every year new

Zhytomyr Ivan Franko State University Journal. Pedagogical Sciences. Vol. 4 (115)

Вісник Житомирського державного університету імені Івана Франка.
Педагогічні науки. Вип. 4 (115)

conditions for the effective development of teaching and learning foreign languages [9: 132]. But the educational space digitalization involves not only positive changes, but also negative changes that threaten the transformation of man into a "digital being" [15: 13], so we should be carefull in methodics. The scientific literature analysis shows that there is the lack of the appropriate scientific and methodical literature on VR implementation in education of Ukraine.

Ukrainian scientists studied some aspects of the problem of using VR in education, in particular, O. Fedorova, O. Shumskyi, O. Golikova, I. Kutsenko, N. Serdiuk, O. Zahorodna studied microlearning in forming English competencies (on the basis of the Kherson State Maritime Academy) with VR involvement through interaction of virtual and online learning in the line of communicative-competency approach [4]; S. Prosianyk studied the methodology of conducting virtual and real excursions when teaching history [7]; N. Serdiuk described the possibilities for an English teacher to use the Google Earth platform as VR teaching English grammar [8]. But the VR-tour in teaching English as foreign language in Ukraine wasn't the subject of many scientific searches in detail.

The scientists of different foreign countries studied the aspects of the using VR in learning English: M. Dooly, T. Thrasher, R. Sadler made a pilot study through a three-month-long VR study conducted with students studying English as a foreign language in Spain [2]; S. Song researched the application of VR technology in middle school students' English speaking in China [10]; A. Adnan studied the learning through 360-degree videos and VR experiences in English language content delivery for students of Public University in Malaysia [1]; A.M. Monteiro and P. Ribeiro studied VR in English vocabulary teaching to youth in Brazil (applied to 25 English students at the Federal University of Juiz de For and from the authors' private course) [6] etc.

Outline of unresolved issues brought up in the article. Despite the study of individual aspects of this problem, the question of methodics for teaching English grammar and lexis in the form of VR-tours remains open.

Aim of research is to reveal the possibilities of implementing virtual tours in teaching English as a foreign language and to propose the complex of VR-tours for studying English grammar and lexis to applicants for general secondary and higher education.

The methods used to achieve the research goal were theoretical (analysis and synthesis).

Results and discussion. The following *types of VR technologies*, distinguished by O. Velykyi [11], should be mentioned:

- with the effect of full immersion: they provide a believable simulation of the VR world with a high degree of detail, require the presence of a high-performance VR system, that is a special equipment that provides an immersive effect, recognizes and reacts to user's actions in real time;

- non-immersive (for example, simulations with image, sound and controllers broadcasted on the wide format screen);

- with shared infrastructure (for example, three-dimensional virtual worlds with elements of social networks or games like Minecraft, etc.), they do not provide full immersion, but well-organized interaction with other users;

- based on Internet technologies (Virtual Reality Markup Language, similar to HTML).

The main means of VR, the task of which is to use special technologies to simulate the work of the human brain to perceive what it sees as real, are:

1. VR-systems, which are devices that more fully, compared to conventional computer systems, simulate interaction with the virtual environment by influencing all human senses [14]. An exemplary immersive VR system should include the following elements: a) multi-sensory hardware to access the VR environment, namely appropriate helmets with displays, sensory clothing (suits/jumpsuits), footwear and accessories (gloves, masks, etc.), which are equipped with devices with numerous sensors for tracking the body parts movements etc.; b) VR-simulator,

Zhytomyr Ivan Franko State University Journal. Pedagogical Sciences. Vol. 4 (115)

Вісник Житомирського державного університету імені Івана Франка.
Педагогічні науки. Вип. 4 (115)

which "contains a core of software and hardware that provides sensory information to sensors; means of creating an effect that controls (levers and pedals with appropriate counteraction, a microphone for verbal extralinguistic form of reaction, etc.)" [14]; c) a variety of programs to describe the dynamics, structure and laws of interaction in a specific VR environment; d) VR geometry to describe the physical properties of objects in the VR world; e) VR platform that provides interconnection.

2. Special helmets or glasses, the display of which (in front of a person's eyes) displays three-dimensional (hereinafter – 3D) video and due to certain movements of the head (right/left and up/down) the image changes, which makes it possible (conditionally) to look back and look in different directions, feeling in another reality.

3. Traditional two-dimensional (hereinafter – 2D) controllers (mouse, joystick, etc.) and 3D controllers (manipulators, for working in 3D space).

4. Software and computer hardware.

Speaking in our research about VR-tours, we will have in mind the type of VR technology without full immersion (focusing on the capabilities of an average institution of general secondary education and of higher education in Ukraine which don't have such high-stan VR hardware and software as VR systems, but only primarily computers and basic software).

VR-tour is "a simulation of an existing location, usually composed of a sequence of videos, still images or 360-degree images" [13].

Given the hypothesis that a VR-tour as a form of teaching English in educational institutions can be effective in teaching English as a foreign language, it is worth moving on to specifying its types.

We will try to offer our point of view on the division of types of VR-tours for learning English as a foreign language at educational institutions with the aim of developing foreign language communicative competence through lexis and grammar:

I. According to the content:

1) survey (virtual 3-D survey of various locations and objects of the museum/city/region/country/planet, etc., with the aim of broadening the worldview of the applicants and developing their socio-cultural competence);

2) thematic:

- lexical, aimed at the development of the lexical component of students' language competence;

- grammatical, aimed at the development of the grammatical component of the language competence of the applicants;

- lexical-grammatical, aimed at the development of lexical and grammatical components of students' language competence, which includes knowledge of lexical units and grammatical rules, with the help of which meaningful statements are created;

- phonetic, aimed at the development of the phonetic component of language competence, mastery of sounds, intonation, rhythm, etc.;

- conditional-communicative, aimed at the development of speech competence, namely listening skills, including translation, transformation, imitation, as well as reading and writing, etc.;

- communicative, aimed at the development of speech competence, in particular, the skills of operating language units in accordance with the topics and purposes of communication situations, including reproductive, descriptive, discursive purposes, the development of dialogic/monological speech, etc.);

3) educational (VR-tour, VR tour-competition, VR excursion guided by a teacher, VR-tour by the route, VR quest-tour, VR tour-lecture, etc.).

II. According to the number of participants: individual, pair, group, collective.

III. According to the VR technologies used:

1) full-immersion VR-tours in a highly detailed VR world, that requires immersion through a high-performance VR system (hardware and software of the VR environment and interactions in it, sensory clothing, shoes and accessories, VR simulator, VR geometry to describe the objects of the VR world);

2) VR-tours without immersion, which are virtual tours in the form of simulation

Zhytomyr Ivan Franko State University Journal. Pedagogical Sciences. Vol. 4 (115)

Вісник Житомирського державного університету імені Івана Франка.
Педагогічні науки. Вип. 4 (115)

with image, sound and controllers broadcast on a widescreen;

3) VR-tours with shared infrastructure, which are virtual tours in 3D VR worlds with elements of social networks or games (like Minecraft, etc.), where there is well-organized interaction with other users, in particular native speakers.

IV. According to the means used in creating a virtual tour:

1) high-tech VR-tours (using high-performance fully equipped VR systems and special VR technologies, etc.);

2) medium-tech VR-tours (using special VR helmets/glasses with a 3D image on the display screen, which changes due to certain movements of the head, which makes it possible to look around and look in different directions; using 3D controllers, special software and computer support, various online platforms, etc.);

3) low-tech VR-tours (using traditional 2D controllers, such as a "mouse", joystick, etc., and elementary computer support with the ability to display images on a laptop screen, projector or TV, etc.).

In our research, taking into account the mostly not too high-tech material and technical support of average educational institutions, we focus on medium-tech and low-tech VR-tours without immersion, which can be diverse in terms of the number of participants (individual, pair, group, collective) and content (survey, thematic, educational).

In order to simplify the description and implementation of specific lexical-grammatical medium-tech and low-tech VR-tours without immersion, since it is this type of VR-tours that can be used more often for teaching English lexis and grammar, we tried to form a certain complex which consists of two parts, according to content and creation:

Part 1 (teacher's and students' creation). Using VR-tours to learn English grammar and lexis based on online platforms, among which we can name Google Earth, Google Earth Plus, Google Earth Pro, Google Earth Engine, Mapillary, Tour Builder, Historypin, Tour Creator, etc.

Let's consider VR-tours using the example of Google Earth (https://earth.google.com/web), which is a free platform that shows a satellite view (together with 3D-visualization of places on the planet from a height bird's eye view and at the level of human eyes) of the planet Earth, Mars and the Moon. Thus, the following VR-tours can be used to teach English grammar and lexis:

1) VR-tours of visiting geographical locations to consolidate lexical-grammatical material (a guide is a teacher or a learner) while studying topics about Ukraine (such as "Ukraine", "My native town", etc.) or about English-speaking countries, their cities and important places, events, etc. ("Great Britain", "Life in London", "English-speaking countries", "Adventures", "USA"), but also practice grammar, for example:

- to consolidate knowledge and the ability to form a variety of interrogative sentences (the teacher could ask during VR-tours *"Do you know the sightseeing of London?", "Who knows where Big Ben/city/building/tower is?", "It is the Palace of Westminster, isn't it?", "Is it the Palace of Westminster or the House of Parliament?"* and give tasks like *"Guess this city/building/tower", "Ask me about this city/building/tower and I'll tell you"*, etc.), as well as short or full answers to them;

- to practice adverbs like *ever, never, since, just, then*, etc.

Below is a fragment of the VR-tour around London (by the help of the Google Earth Platform), during which you can practice English lexis and grammar (Figure 1).

Zhytomyr Ivan Franko State University Journal. Pedagogical Sciences. Vol. 4 (115)

Вісник Житомирського державного університету імені Івана Франка.
Педагогічні науки. Вип. 4 (115)

Fig. 1. A fragment of a VR-tour to London

2) VR-tours of the overview and description of monuments and sights:

- to consolidate knowledge and the ability to use not only lexical units of conveying the appearance of a person or an object, but also certain grammatical constructions and parts of speech, for example, different degrees of comparison of adjectives or adverbs. Here are the following pairs for comparison: Big Ben and Little Ben, White Tower and Natwest Tower, London Bridge and Southwark Bridge, Imperial College London and University College London 'UCL', Westminster Abbey and St Paul's Cathedral, Science Museum and Victoria & Albert Museum, Albert Memorial and Winston Churchill Statue, etc.;

- to consolidate knowledge and the ability to use English lexis and grammar when describing the location of an object, and what is next to or behind/in front of/between/above/under, etc.);

- by analysing photo cards with information (in English) about the particular sightseeing or simply the area, to consolidate knowledge and skills of using certain lexical units and grammatical constructions, for example, tense forms, word order in an English sentence, passive and active verb states, etc.

3) VR-tours to Mars and the Moon, a description of the space between them and the Earth, used for working out such grammar themes as the conditional mood of the verb (Conditional Mood, Subjunctive I, Subjunctive II, Suppositional) and conditional sentences. For example, "while completing tasks for composing or continuation of conditional sentences like: *If I had an opportunity, I would visit Mars. If I were a cosmonaut, I could fly to the Moon. If we have learned constellations at school, I would guess the Great Bear now. If I were fond of stars, I could have named the constellation at once"* [8: 237].

4) VR-tours by the teacher's instuctions and commands to the cities of Ukraine or English-speaking countries, where by the help of the teacher's instructions (such as *turning right, to the left, cross the road, approach the monument*) a student in the role of "a driver" listens carefully to the teacher, quickly understands and follows all the commands and instructions, clarifies whether the "road" is correct, shows a tour to all the class/group. Such VR-tours could be used:

- to consolidate knowledge and skills of using adverbs of place and time;

- to consolidate knowledge and skills of forming and using imperative sentences (even used by students for the purpose of prompting to "a driver", helping other

Zhytomyr Ivan Franko State University Journal. Pedagogical Sciences. Vol. 4 (115)

Вісник Житомирського державного університету імені Івана Франка.
Педагогічні науки. Вип. 4 (115)

students to follow the instruction correctly etc.).

5) VR-tours along a route planned before by the applicant or a group on a topic such as "Trips Round the World", "Transport and Travels", "Trip of My Dream", for the development of grammatically correct speech skills, when they can practice:

- modal verbs in sentences like *"We can go there to see Big Ben", "To your left you can see the Elizabeth Tower", "You may come closer to this monument", "You should visit this city"*, etc.);

- verb tense forms and their agreement in a complex sentence, etc.

5) VR-tours as a trip along an improvised route in the form of micro-dialogues *"How can I get to … ?"*, used for the development of lexical-grammatical competence, for example within the limits of a grammatical topic (adverbs of place; interrogative sentences; the structure of "There is/are...", emphatic or negative sentences; non-finite forms of the verb and combinations with them; tense forms or their agreement, etc.). For micro-dialogues, a small exchange of questions and answers between a pair of applicants will be enough, and then one of them "goes" on a VR-tour to the destination, the task is considered completed if he/she finally reaches the planned place. Then, in the same place, this applicant of education sees another one, who also asks for directions to another specific place; the main requirement is that the applicants (who give the instructions for the improvised route) actually know how to get to that particular point.

Part 2. Using already existing online VR-tours for studying English grammar and lexis:

1. VR-tour "Ukrainian open-air museums" (https://museums.authenticukraine.com.ua/en/) (in English) will help applicants to learn English vocabulary on the life of Ukrainians of the last century, to consolidate the use of lexical-grammatical constructions, etc. So, you can use 7 tours to 7 authentic museums of Ukrainian culture and life, namely:

- The Museum of Folk Architecture and Life of the Serednia Naddipianshchyna (Pereiaslav), the site has a clear start page, gives a possibility to virtually "look" at it from a bird's-eye view (Figure 2) or at eye level through the VR map (Figure 3).

During the VR-tour you can move using the arrows at the bottom, in the middle of the screen (for ex. at Figure 3), which is convenient and easy to use.

Open-air museum "Mamaieva Sloboda" (Kyiv). It is worth noting that the locations from this VR-tour has its own page from which you can start, information written and voiced in English; after visiting this locations virtually, a special green mark ("Ѵ") appears (on each location, on the name of the trip at the top of the page and on the general page of the tour), which is very convenient, because a teacher can check whether students have visited these locations or not.
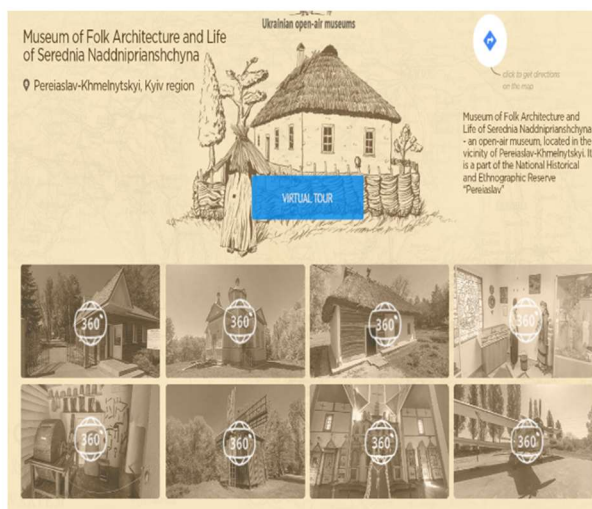

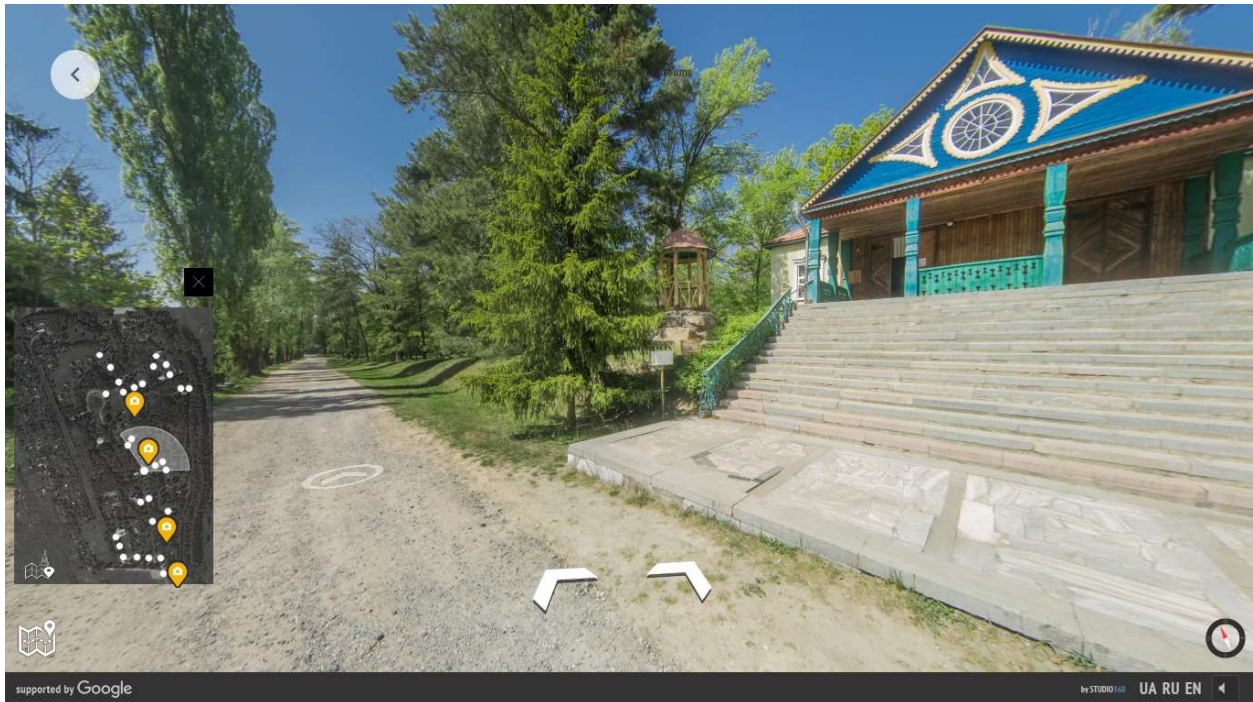***Fig. 2. Start page of VR-tour to museum & a bird's-eye view (Pereiaslav)***

Zhytomyr Ivan Franko State University Journal. Pedagogical Sciences. Vol. 4 (115)

Вісник Житомирського державного університету імені Івана Франка.
Педагогічні науки. Вип. 4 (115)

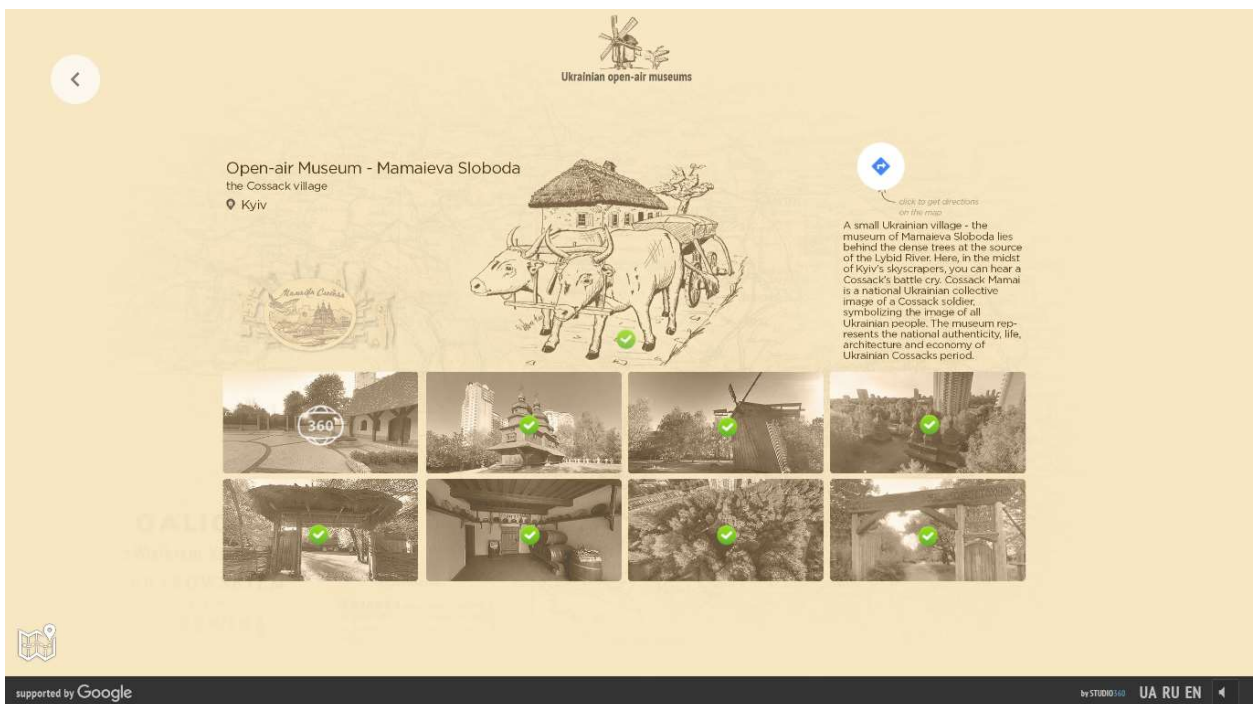**Fig. 3. One of the locations at Museum in Pereiaslav**

Fig. 4. Completed VR-tour to "Mamaieva Sloboda" Museum (Kyiv)

The pupils/students can also visit houses during the VR-tour and, listening to information in English, clearly understand the way of life of the Ukrainian people at that time and learn many new words that they did not know before.

- National Museum of Folk Architecture and Life of Ukraine (Pyrohovo);

- Open-air Museum "Bohdan Khmelnytskyi Residence" (Chyhyryn);

- Zaporizhzhia Sich Open Air Museum (Zaporizhzhia);

- Museum of Folk Architecture and Life "Shevchenkivskyi Hai" (Lviv);

- National Museum of Folk Architecture and Life (Uzhhorod).

Zhytomyr Ivan Franko State University Journal. Pedagogical Sciences. Vol. 4 (115)

Вісник Житомирського державного університету імені Івана Франка.
Педагогічні науки. Вип. 4 (115)

Note that with such VR-tours there is no need to think over the route and write certain steps, make points on the map, etc., since everything has already been done in advance and is available for free use on the site, including for convenience additional maps and all the necessary icons (such as new objects, directions of possible movement, compass, etc.).

2. VR-tours to Art Museums. We selected 5 VR-tours in English from the website of the British National Gallery (London) (https://www.nationalgallery.org.uk/visiting/virtual-tours):

1) *The Director's Choice Virtual Exhibition* (https://www.nationalgallery.org.uk/visiting/virtual-tours/the-directors-choice);

2) *Fit For a Queen Virtual Exhibition* (https://www.nationalgallery.org.uk/visiting/virtual-tours/fit-for-a-queen);

3) *Fruits of the Spirit Virtual Exhibition* (https://www.nationalgallery.org.uk/visiting/virtual-tours/fruits-of-the-spirit);

4) *Virtual Reality Tour of the Sainsbury Wing* (https://www.nationalgallery.org.uk/visiting/virtual-tours/sainsbury-wing-vr-tour);

5) *Sensing the Unseen: Step into Gossaert's 'Adoration'* (https://www.nationalgallery.org.uk/visiting/virtual-tours/sensing-the-unseen-at-home).

These VR-tours will not only allow applicants for education to admire the works of art, but also to learn words and combinations through listening, reading, translating the material, since each picture of the VR-tour is accompanied by information, as from the first VR-tour (Figure 5) in the form of a certain informative audio card, voiced in English, which is directly relevant for studying English grammar and lexis.

Fig. 5. Audio card from "The Director's Choice Virtual Exhibition"

It is interesting that pupils/students can work endlessly with each informative audio card: to listen many times, comparing it with the text, to read or to translate it, to learn new lexical units, consolidate understanding of lexical-grammatical structures, to see the 3D picture by changing the viewing angle, to read the additional information about the artist on the Gallery page, to get help how to work in VR etc.

The second VR-tour "Fit For a Queen Virtual Exhibition" is dedicated to Queen Elizabeth II (Figure 6) and other representatives of monarchies of European countries from different periods, during which the pupils/students can consolidate (from informational cards) the vocabulary related to her life, practicing English lexis and grammar.

Zhytomyr Ivan Franko State University Journal. Pedagogical Sciences. Vol. 4 (115)

Вісник Житомирського державного університету імені Івана Франка.
Педагогічні науки. Вип. 4 (115)

Fig. 6. The Fragment of "Fit For a Queen Virtual Exhibition"

The third VR-tour "Fruits of the Spirit Virtual Exhibition" allows to consolidate knowledge of units related to 9 concepts, which are discussed in 18 paintings by English and other artists (9 virtual rooms), namely: love, joy, peace, patience, kindness, generosity, faithfulness, gentleness, self-control. During the VR-tour, the class can discuss the nature and relationship of these words and images in the pictures, so students can practice these lexemes and apply grammar knowledge in practice. It's also possible to make a VR-competition for the largest number of synonyms or antonyms found during the VR-tour for these 9 concepts (or specific lexical-grammatical constructions; exceptions in a specific time form/state; archaisms, etc.) or give a task to write a report/speech/ essay, offering to add 9 paintings by Ukrainian artists to each of the rooms.

The fourth VR-tour "Virtual Reality Tour of the Sainsbury Wing" provides an opportunity to see 270 paintings (Figure 7), hear their history and description, learn new words, practice listening and grammar skills. This VR-tour can be fully immersive, not only through the learners' mobile phone or the teacher's computer, etc., but also through a special VR headset, system or VR helmet or glasses.
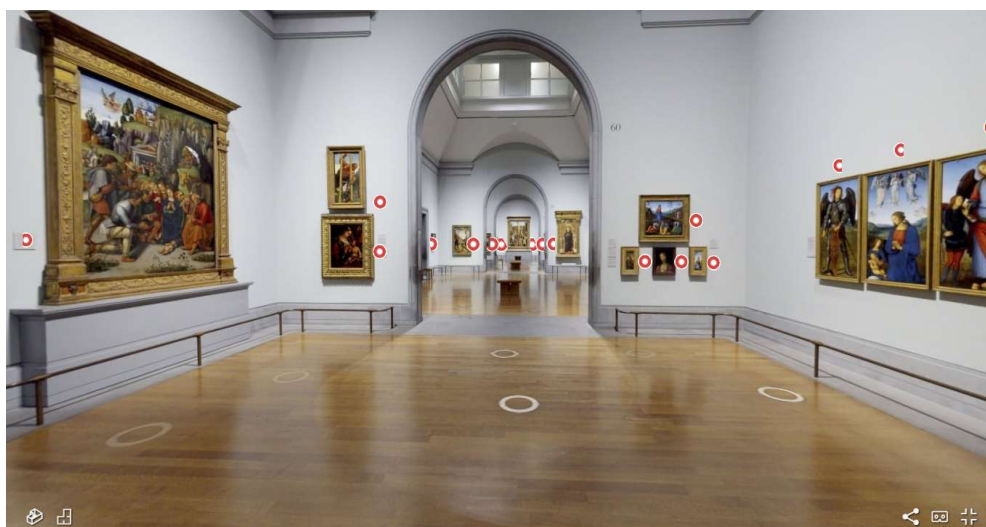

Fig. 7. The Fragment of "Virtual Reality Tour of the Sainsbury Wing"

The fifth VR-tour "Sensing the Unseen: Step into Gossaert's 'Adoration'" is dedicated to Gossaert's masterpiece "Adoration of the Kings" and is created in

46

Zhytomyr Ivan Franko State University Journal. Pedagogical Sciences. Vol. 4 (115)

Вісник Житомирського державного університету імені Івана Франка.
Педагогічні науки. Вип. 4 (115)

the form of experimental interactive, because it is not only designed for mobile devices, computer and has a QR code, but gives students the opportunity to explore the fragments of the picture in detail and immerse themselves in the world of interactive English-language sound (preferably through headphones). The VR-tour offers the possibility of: repeatedly listening to 6 short poems in English about the birth of Jessus and perceiving the rhythm of poems, pronouncing sounds, words; viewing the details of picture fragments and hearing the sounds of real reality (animal sounds, voices and whispers of people, melodies, sounds of objects, etc.), which also causes the effect of partial immersion; consolidating vocabulary, understanding grammatical constructions. During this VR-tour at English classes, it's possible to practice vocabulary for characterizing and describing people, animals, objects, and sounds (lexis); adjectives and adverbs, their degrees of comparison (grammar). This results in an interesting form of VR-tour within one mega-interactive picture, then use of which could be especially relevant during the Christmas holidays, etc. A fragment is shown below (Figure 8).
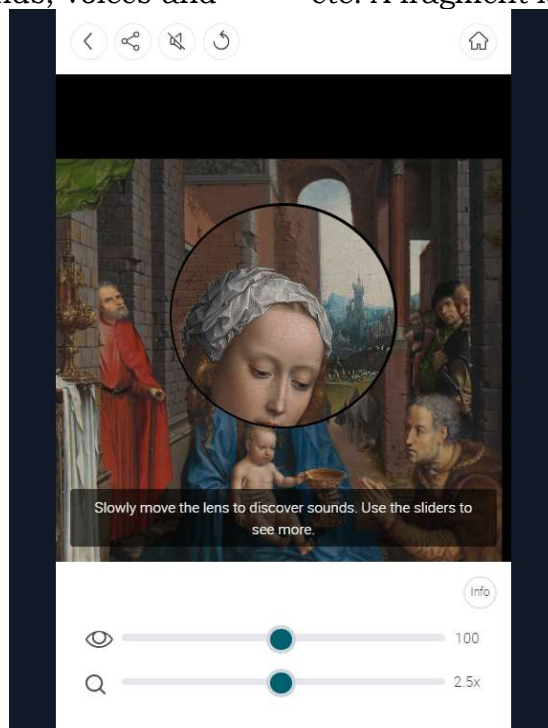

Fig. 8. The Fragment of VR-tour "Sensing the Unseen: Step into Gossaert's 'Adoration'"

3. VR-tours to Natural History Museums. We also suggest using the following VR-tours for learning English lexis and grammar:

- VR-tours, which are offered on the website of the National Museum of Natural History, Washington, (https://naturalhistory.si.edu/visit/virtual-tour);

- VR-tours from the website of the Natural History Museum, London, (https://artsandculture.google.com/partner/natural-history-museum).

There are informative cards on the walls and glass next to the objects of VR-tours, which, in addition to informing, will help the participants to consolidate their skills reading, translation, learn new words and understand them without a dictionary. Knowledge of grammar will also be put into practice.

So, such VR-tours can be used to teach English lexis and grammar in all the kind of institutions of general secondary education and of higher education.

Conclusions and research perspectives. Thus, we have developed a certain complex of VR-tours for teaching English grammar and lexis in educational institutions, which consists of two parts according to the way of their creation, namely: *Part 1 (teacher's and students'*

Zhytomyr Ivan Franko State University Journal. Pedagogical Sciences. Vol. 4 (115)

Вісник Житомирського державного університету імені Івана Франка.
Педагогічні науки. Вип. 4 (115)

creation) – The use of VR-tours based on online platforms (such as Google Earth or similar Google Earth Plus/Pro/Engine, Mapillary, Tour Builder, Historypin, Tour Creator), in particular, VR-tours visiting geographical locations to consolidate lexical-grammatical material, VR-tours of the overview and description of monuments and sights, VR-tours to Mars and the Moon, VR-tours by the teacher's instuctions and commands, VR-tours along a route planned before by the applicant or a group, VR-tours as a trip along an improvised route; *Part 2 – Using already existing online VR-tours for studying English grammar and lexis:* VR-tour "Ukrainian open-air museums" (to 7 authentic museums of Ukrainian culture and life, Ukraine), VR-tours to Art Museums and to Natural History Museums (USA, UK).

The prospects of the research are seen in the pedagogical experiment of using VR-tours in teaching English grammar and lexis.

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Zhytomyr Ivan Franko State University Journal. Pedagogical Sciences. Vol. 4 (115)

Вісник Житомирського державного університету імені Івана Франка.
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