The Use of Digital Technologies in Teaching a Foreign Language

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Abstract

The article reveals one of the acute aspects of higher education – the use of modern digital technologies. The article describes the possibilities of modern service programs used in the learning process, methods of presentation of educational material and knowledge control. The interpenetration of the content of different academic disciplines as a factor of creating a unified educational space through modern digital technologies is analyzed in the article. The use of modern digital technologies is considered as a factor of successful mastering of educational material. The authors come to the conclusion that the productive use of digital technologies, the involving students in an independent search, the selection of information forms students' competencies that meet modern requirements. Using test system developed at MPEI for grammar assignments is presented in the article.

Keyword: modern digital technologies, general cultural competencies, interdisciplinary connections, unified educational space
INTRODUCTION

The modern world is an era of rapidly developing new technologies and mass media aimed at raising intercultural and interlingual communication to a new level. The creation of highly qualified personnel potential of the future, meeting the requirements of modern society, is the task of education.

Within the framework of the Federal project "Modern digital educational environment in the Russian Federation", approved by the Government of the Russian Federation, it is planned to "widely introduce digital tools of educational activity and holistically include them in the information environment [3, p. 121]."

Digitalization opens up new opportunities to obtain and improve knowledge, so that "the education process becomes more flexible, adapted to the realities of the modern day and contributes to the formation of competitive professionals in the nascent "digital world" [10]. The organization of the educational process with the use of digital technologies affects many subject areas, including the teaching of foreign languages.

The most valuable for realization of success and intellectual integrity of the student is application of interactive technologies [8]. The most important constituent of the information and computer technologies introduction are digital educational resources.

Barbara Minto, having studied the peculiarities of the perception of the individual, came to the conclusion that human thinking is based on images. Therefore, when writing any document, it is necessary to find a weighty, visible, sensual image to start with [6, p. 192].

Digitalization of the educational process is closely interrelated with the interdisciplinary approach in teaching. Interdisciplinary connections, categorical and methodological unity of training courses, the latest achievements of modern science and integration of information flow allow the student to successfully master general cultural competencies and deeply comprehend the professional tasks facing him [11, p. 24-26]. Modern and relevant now is the statement concerning the reorganization of education made by the greatest teacher and thinker of the 17th century Y. A. Komensky, who in his book "the Great didactics" stressed that "everything is in mutual connection, should be taught in the same connection" [4, p. 287].

One of the conditions for successful study of a foreign language in high school in the light of the requirements of the present time is the use of modern information technologies at all stages of education. Modern information technologies are an effective tool that will facilitate the assimilation of knowledge, make learning interactive, communicative, interesting and visual.
The interpenetration of the content of different academic disciplines allows to create a unified educational space through the use of innovative pedagogical methods and organizational forms of training, modern digital technologies of presentation of educational material, knowledge control, skills and abilities of students. During classroom lessons in a foreign language for students of engineering specialties in technical universities, the main emphasis is on the lexical and grammatical aspects, i.e. terminology and texts of technical orientation. Training students of engineering specialties is most effective when using the information space of the subject area corresponding to the profile of education. For example, for students of the National research University "MPEI", studying the profile of "electric power and electrical engineering", as an object to create a terminological base, an electrical circuit can be offered.
A generator circuit

Fig. 1 presents a generator circuit containing various elements in the form of conventional graphics. Digital technologies allow to move the studied scheme to an interactive whiteboard, which makes the learning process bright, visual, dynamic, contributing to a new perception of the educational material. Using the possibilities of computer technology, the teacher calls the elements of the chain, which are displayed on the interactive whiteboard:
Electrical Schematic Diagram:

1. VT1, VT3 – n-p-n type Transistor
2. VT2 – p-n-p type Transistor
3. R1... R Resistor
4. C1- Capacitor
5. S1 – Switch with closing contact
6. K1, K2 – relay Winding
7. K1.1, K1.2 – the closing contact of the relay
8. VD1 Diode
9. XS1...XS4 – Socket (socket)
Verification and consolidation of the material can be carried out in the form of a quest. The interactive whiteboard displays the question and gives options for the answer. For example: the relay coil?

**TABLE 1. NUMBERS OF ELEMENTS**

<table>
<thead>
<tr>
<th>1</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>9</td>
</tr>
</tbody>
</table>

The correct answer is 9. It is highlighted by bright light and the number on the scheme is also highlighted. Or a number is given, such as 4, and students are asked to name the circuit element:

**TABLE 2. NAMES OF ELEMENTS**

<table>
<thead>
<tr>
<th>Socket</th>
<th>Capacitor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resistor</td>
<td>n-p-n type Transistor</td>
</tr>
</tbody>
</table>

The correct answer "Capacitor" is highlighted by bright light and the number on the circuit is also highlighted. Having previously gained knowledge about the electrical circuit, students can more easily assimilate the lexical material related to this subject area.
Web 2.0 educational technology, a network software, supports group interactions of a completely new character, including personal actions of participants and communication of participants among themselves. This technology allows the teacher, as a participant of the educational process, to monitor the results, make corrections to each individually, working with the group as a whole. Application of this technology allows to save classroom time of the teacher and students and gives the chance of the individual and differentiated approach to students.

To demonstrate the electrical circuit, it is convenient to use the online service Prezi.com, allowing participants of the educational process to increase (or decrease) any element of the slide, embodying the principle of clarity, presenting information visually. Prezi service can be used in both classroom and extracurricular activities to perform such tasks as a group project. Each participant of the group project can see the result of the work in the form of a complete model, in this case, an electric circuit, but also can see the result of their own work and get an assessment, correction, explanation from the teacher, who is also a participant of the process.

The Stixy service also can be used in the organization of project activities, connecting groups of students to the created virtual tables. For example, participants of the process are asked to assemble an electrical circuit from the listed elements. The teacher acts as a moderator. For group work cacao service is used, where participants can collectively modify, supplement and correct the results of project activities. The online service crossword Factory also can be used to teach vocabulary [12], which allows participants to create a crossword puzzle using given words quickly.

Digital technologies allow, on the basis of the principles of visibility and accessibility, to carry out a differentiated approach in teaching, paying attention to each participant of the educational process, without leaving a "vacuum" in the educational process for other participants. Thanks to the digitalization of learning, the workflow in the classroom of the group as a whole does not stop while connecting to the service of the teacher to adjust the activities of the individual student.

Digital technologies make it possible to organize the educational process more productively, efficiently, interesting, informative and achieve better results. According to statistics, the use of multimedia materials and computer networks reduces learning time almost three times, and the level of memorization through the simultaneous use of images, the sound and the text increases by 30-40 percent [5].
Mastering grammatical structures through the implementation of the principle of visualisation

A variety of innovative methods and technologies in teaching a foreign language allows students to avoid monotonous memorization of terms and boring work on the text that does not have emotional coloring. Computer technologies in the educational process also help eliminate the psychological barrier, uncertainty in their abilities and knowledge of some students.

The use of multimedia tools (interactive video and audio clips, with animation elements among others) in teaching oral speech has a huge advantage, since this method makes it possible to choose the pace of passing the material and the level of tasks, improves the speed of mastering grammatical structures and vocabulary accumulation through the implementation of the principle of visualisation [1, p. 312].

Multimedia means allow to use almost all students’ sense organs, combining printed text, graphic image, movable video, static photos and audio recording, creating a "virtual reality" of real communication. Using the visibility of the multimedia whiteboard and the electrical circuit already learned, students can also learn the English grammar tenses system.

For example, by providing a visual representation of a closed circuit with electrons moving along it, students are explained to the grammatical tenses of the English language.

**The Present Continuous Tense**: "The current is flowing through the circuit now". (We see it).

**The Present Perfect Tense**: "Opening the circuit, the electrons immediately stop moving'. The current has just stopped moving (and we saw it).

**The Present Indefinite (Simple) Tense**: "Current flows through the circuit only when the circuit is closed". In reality current flows through the circuit only when the circuit is closed.

**The Past Tenses** – The Past Simple Passive and The Past Simple Tenses: "Two minutes ago, when the circuit was closed, the current was moving through the circuit". Two minutes ago, when the circuit was closed, the current was really moving through the circuit.
To control the knowledge of students the testing system created at the Engineering Graphics Department of NRU "MPEI" can be applied. The system can be used both in a local network and on the Internet. The system allows to create tests in the form of static and dynamic graphical models that can be used to test both vocabulary and grammar knowledge.

For example, a three-dimensional graphical model of a technical device can be represented in motion with an indication of the time of the event. In the assignment, the student is asked to apply the appropriate grammatical construction and terminology to describe the event. The set of test tasks is input by the teacher. Test tasks are presented in a random order, the test results are recorded and can be stored in a special file and printed (Fig. 2 – 4).

In Fig. 2 – 4 the unit "Valve" used for vocabulary and grammar testing students educated at Heat Power specialties is presented in different positions.
The valve consists of such parts as body, base, pipe union, stem, box, bush, nuts, washer, handle, rings. All of these terms are used in scientific and educational literature. So they must be learned by students during their studies at the university.

Fig. 2. The valve in opened position

Fig. 3. The valve in midway position

Fig. 4. The valve in closed position
Test System

The Test System allows you to imagine the valve both in a static position and in motion.

These capabilities of the system are used to test the knowledge of grammatical constructions (tenses, phrases).

The computer technologies used for testing knowledge require the interaction of specialists from various professions (programmers, linguists, psychologists) to create the content of a test system.
Digital technologies in the modern world are not only a tool, but a medium of existence that opens up new opportunities in learning. "In the educational process, digitalization is aimed at maintaining the permanence of learning, that is, the concept of life-long-learning, that implies lifelong learning, and in addition, its uniqueness on the basis of the mechanism of advanced learning" [7, p. 13].

The productive use of digital technologies, the involving students in an independent search and the selection of information forms their competence of the XXI century. The use of the latest digital technologies in teaching a foreign language provides the most effective perception of educational material, mastery of lexical units on any topic, the development of various types of speech activity, gives a sense of comfort. The task of learning a foreign language is the formation of a person who wants to participate in the process of intercultural communication, the formation of communicative, i.e. linguistic and socio-cultural competence [9, p. 305-307].

For realization of success and intellectual integrity of the student application of interactive technologies is an especially valuable factor [8, p. 471– 473]. With the help of computer technologies in the study of a foreign language, the skill of the ability to learn is also acquired [2].
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THANK YOU FOR YOUR ATTENTION!
Thank you for attention!

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