The Use of Modern E-learning Technologies at English Lessons in a Technical University Pedagogical Process

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Abstract — To create a competitive specialist new forms, methods and technologies in foreign language teaching are needed. This article deals with the use of learning technologies at foreign language practical lessons, the work experience of Foreign Languages Chair of Ryazan State Radio Engineering University named after V.F. Likhin for improving the quality of its university pedagogical process. The use of distance learning courses, educational electronic platforms in English are given. The examples of a distance learning course, e.g. “English for Electronics”, and an educational electronic platform, e.g. “Information Science and Computer Engineering” are presented in the article.

Keywords — E-learning, computer education, information competence, distance learning, blended learning, an educational electronic platform

I. INTRODUCTION

The modern system of education requires new forms, methods and technologies in foreign language teaching. The reduction of foreign language practical lessons leads to the reduction of the information studying at the lessons, that is why the language material choice, the organization and the optimization of the training with the help of computers, Internet technologies and E-learning is needed.

II. MAIN PART

E-learning is one of the modern information educational technologies, the system of E-learning on the basis of information and communication technologies, and the method of distance learning with the help of computer systems. According to UNESCO, E-learning is an education with the help of Internet and multimedia.

The term “E-learning” has been used to describe an educational setting in which teaching and learning take place within an Internet-based environment [1] and as “the use of digital technologies and media to deliver, support and enhance teaching, learning, assessment and evaluation” [2, pg. 6].

E-learning is the organization of educational activities used in existing databases and in the implementation of educational information programs and providing the possibility of its processing by information technologies, methodologies, algorithms, technical means and information and telecommunication networks that provide data transmission over communication lines, teachers and students’ interaction [3].

Thomas M Connolly and Mark Stansfield define E-learning as a generic term to encompass both (fully) online learning and blended learning [4]. Online learning represents any class that offers its entire curriculum via Internet thereby allowing learners to participate regardless of geographic location (place-independent), theoretically 24 hours a day (time-independent). This is in contrast to the traditional classroom instruction, which is time and place bound, face-to-face, typically conducted in an educational setting and consisting primarily of a lecture/note-taking model, and blended learning, which is a combination of online learning and traditional classroom instruction.

E-learning may have different meanings such as: individual work with E-materials using personal computers and mobile phones; receiving consultations, characteristics, advice from distant consultants (teachers), the possibility of distance cooperation; creation of distributed community of i.e. social networks users having public virtual educational activity; well-timed delivery of E-materials for education; standards and specifications on educational E-materials and technologies; distance means of education; formation and increase of information culture for all and their knowledge of modern information technologies, growth of their activity effectiveness; knowledge and promotion of information pedagogical technologies and their transmission to teachers; possibility of educational web-resources development; online access of teachers and students to the best world educational resources at any convenient time (cross-cultural material, news from youth life, articles from newspapers and magazines, any important literature and so on); participation in testing, Internet-conferences, competitions, video chats, correspondence with students from different countries; usage of digital educational resources, such as Internet portals, libraries and so on, automated collection of primary statistic information; distance learning.

The instructional media elements of E-learning could consist of text, video, audio, graphics, animation, or any
combination thereof. A central component of most E-learning courses is some form of two-way interaction between learners and their instructor (a teacher) and between the learners themselves. Synchronous communication tools such as real-time chat and asynchronous tools such as email and discussion boards are common.

Thomas M Connolly and Mark Stansfield are also now starting to see the development of E-learning (mobile learning) through devices like PDAs (Personal Digital Assistants), mobile phones, and smartphones. Initial results on the use of E-learning have been encouraging and research suggests, for example, that E-learning enhances autonomous and collaborative learning and that it can be applied to a wide age range of learners. E-learning is still at an early stage but as these devices become more functional and commonplace they would expect to see significant developments in this area. E-learning has the potential to provide truly "anywhere" learning.

Consequently, E-learning is an education for all people with different assessments at any convenient time. E-learning also includes automated teachers' workspace, E-magazines, planning, electronic teachers' space, sms-alerts and so on.

E-learning can help teachers solve different tasks in educational process. The most important tasks that can be realized while teaching a foreign language are following: use of innovative approach to teaching a foreign language; language skills formation and development; development of foreign language communication skills in different spheres and situations; formation of communication skills and communication culture; formation of professional foreign language competence; increase of students' motivation in learning a professional foreign language; development of students' individual and scientific research work on the basis of specially organized activity using Internet that will encourage students' individual work and remove lack of knowledge and skills; increase of motivation and need in learning foreign languages; realization of individual approach bearing in mind students' individual peculiarities using Internet communication services; use of control and computer testing of knowledge; accessibility of online different dictionaries for translation texts of any difficulty; decrease of teachers' work while preparing for lessons; teachers' motivation increase for their personal creation of electronic educational courses and textbooks; increase of teachers' professional effectiveness that provides self-development and self-perfectionability.

Using E-learning the following didactic tasks can be solved: formation of students' motivation for foreign language activity; increase of lexical resource as active and passive vocabulary of a modern language; activation of students' thinking capacity; use of visual methods; providing practical lessons with new authentic materials; teaching students to work individually with educational materials.

The work with Internet and E-learning form skills for students, which provide information competence, that is seen as the most important component of professional competence and is defined as: personal integrative characteristics, that reflects the readiness and ability to communication in oral and written forms in mother's tongue and foreign languages; proficiency to use information and communication technologies (ICT) effectively in smb's work; proficiency to search and choose useful information according to specific tasks and needs, to use it for achieving personal goals; proficiency to analyze, methodize, recognize and use information from different sources, such as foreign-language sources, encyclopedias, reference books, vocabularies, Internet-resources; proficiency to sort main and minor information; proficiency to orient in a text quickly, using such prompts as keywords, a text structure, introduce information and so on; proficiency to adopt foreign language information in definite situations.

E-learning refers to all forms of education such as class and out-of-class exercises, where electronic and digital means are for presentations and access to educational materials and are used for communication maintenance between students and teachers.

E-learning instruments points to an educational area, which gives the possibility of active, problem-based and creative learning. Students realize the importance of individual regulated learning through open educational offer, that has the following didactic characters: presence of an initial point that is a significant task with a balanced complexity (authentic situations, educational problems, tasks of legalization and estimation), that should maintain and unite existing knowledge and skills; students must participate in recognizing aims and the process of activities; education must determine active and cooperative activity where needed information and ways of solving tasks are got individually and are tested; computer-assisted teaching provides individualization and differentiation of educational processes with the help of different possibilities; individual education provides different means of solving problems, that are represented, discussed, systematized and estimated; acquired knowledge can be used consciously and in different contexts.

It should be mentioned that using E-learning in teaching foreign languages has its peculiarities. There are three main variants of the educational process organization using E-learning. They are the following: self-study (an individual education using electronic educational materials with minimum consultations from a teacher), passive tutoring (teacher's passive guidance, offline consultations) and blended learning (learning combines different educational actions including classroom instruction and individual education under the guidance of a teacher on the basis of electronic educational materials). Nowadays blended learning is seen as the most effective way of learning a foreign language for example in a technical university because of little quantity of hours for lessons and much time for individual work.

Individual education with teachers' guidance using electronic educational university area and electronic educational resources for blended learning can provide effective formation and development of profession-oriented
foreign language communicative competence for students of a technical university in modern educational conditions. According to N.V. Baryshnikov the efficiency of profession-oriented foreign language communicative competence formation doubles in the integration of self-education and multimedia support [6]. It is obvious that a special complex of electronic educational resources for using in an electronic educational area while realizing blended learning is needed for an effective self-education of foreign languages.

Distance education is a pedagogical activity that organizes an interactive cooperation between teachers and students, teachers and teachers, students and students and an interactive source of an information resource (for example, a web page or a web site) [3]. It contains all the components used in the educational process: goals, methods, training tools, organizational forms and more, which are carried out in conditions of using the capabilities of information and communication technologies, such as:

- feedback between a user and a system;
- computer visualization of information;
- storage, transmission and processing of large volumes of information;
- automation of information search and computational activities' processes, information and methodological support, management of educational activities;
- processing the results of an experiment in the educational process;
- control of learning an educational material [7].

Thus, distance education is a more general and comprehensive concept compared to e-learning and distance educational technologies.

III. EXPERIENCE

The foreign language teachers of Ryazan State Radio Engineering University named after V.F. Utkin (RSREU) created distance learning courses for students' self-education on the basis of shareware platform Moodle, which is free, can compete with famous commercial systems and has positive recommendations from foreign and Russian universities [8]. Moodle offers different facilities for educational process support and various ways of educational material presentation, assessment of knowledge and progress control.

In this system the teachers provide educational process according to educational plans. After registration in RSREU distance learning system a student gets an access right to distance learning educational courses, where educational and methodic materials are placed. Moodle gives a full set of instruments that allows students to study individually. Using modern means of network communication in an educational process, students can always connect with teachers, ask any question, get needed consultations. Considering work results in a distance learning educational course final tests and examinations are taken during residential sessions.

One of the main Moodle concepts is distance learning educational course (which includes English) that presents not only the means for educational process organization, but is a communication area for its participants. The participants of a distance learning educational course (teachers and students) must be registered site users (Fig. 1).

[Figure 1. The Main Page of RSREU Distance System (http://dio.rsreu.ru/)]

Let's see any distance learning educational course including courses on foreign languages, e.g. English for Electronics (Fig. 2). The aim, the problems of education, different tasks (exercises, control task tests, etc.), additional materials of the course (dictionaries, textbooks, workbooks, etc.), questionnaires, a calendar of task performance, etc. are presented in the course. Students get different tasks. They have not only writing tasks, but also oral tasks, where they should demonstrate their skills to communicate to each other. Doing these tasks students develop their skills in logical thinking, imagination, creativeness, their writing and oral skills, opinions, critical remarks.

Besides all these things Moodle has soft mark system for all exercised tasks (including tests), that students can get in a course in unit “Marks” of unit “Management”. Every student can see only his/her personal marks in a register [9].

[Figure 2. The External Look of a Distance Course]

The teachers of Ryazan State Radio Engineering University named after V.F. Utkin (RSREU) also use other educational electronic platforms that were created in the university.
An information system for teaching and monitoring students in English in the training program “Information science and computer engineering”, based on modern technologies is actively used.

The client application interface is as follows. The main page of the web application is a user authorization screen. If a user is not registered in the system, then it is necessary to go through the registration procedure, indicating your name, email, group (from the list provided), password and password confirmation.

After entering the system, the administrator can manage the users of the system, namely, approve / reject applications for adding users to the system, create user groups, and edit user lists.

The teacher can determine the maximum number of possible errors. Depending on the level of complexity, the number of mistakes made may vary.

The teacher sets the period for testing, testing time for each student.

Also, the administrator can create / edit / delete modules, module themes, topic materials, which can be in the form of a text, graphic, multimedia information.

The administrator can create / edit / delete tests for the topics presented, and he can customize them, for example, depending on the complexity or form of student education (full-time / intra-extramural / extramural). The teacher also gives each student a type of test.

After entering the system, the user gets to a page with a list of modules that were given to him by the teacher, depending on the level of training (Fig. 3). For the training program “Information science and computer engineering” of the program “Space information systems and technologies” as an example, we chose the following texts: “The Study of Space” and “Great Scientists”.

The user can study topics (read the text, learn the new words, translate the text, listen to audio materials, do the post-text exercises on vocabulary and grammar, etc.).

So, having studied the text, for example, “Space Exploration”, the user gets access to testing. Tests are distributed by the level of difficulty. Various sections of testing are provided, for example, “Vocabulary”, “Grammar”, “Listening”, “Reading”, “Writing”, and “Speaking”. Depending on their form of training, level of qualification, the student gets access to a particular test (Fig. 5). With each semester, the level of the test material is complicated. There is also a difference in test material for full-time, intra-extramural, and extramural students.

Then the user can select one of the modules and study the topics presented in it. So, for example, choosing the “The Study of Space” module, the user gets access to the following topics: “Modern Researches of Space” and “Space Exploration”. By studying the topic “Space Exploration” (Fig. 4), the user has the opportunity to learn the available materials (texts on the topics “Space Exploration” and “Space History”).

The user passes the test attached to this topic and can immediately see the test results. In the test results, the student can see the number of attempts that he used, sections in which errors were made. If the student has not passed the test, then before taking the test again, he/she will be redirected to the rules on which he made mistakes. After learning the rules, the student can begin testing again.

It is important to note that the teacher (administrator) can choose the number of attempts available to the student (user). If the results of the previous pass are unsatisfactory and there is an additional number of attempts to pass the test, then the student can pass it again. It should be noted that for extramural students, the number of attempts can be increased by the teacher.

In addition to administering and configuring the modules, the teacher can see the statistics of the tests with the number of
errors for each student, with specific errors on specific topics, the date of the test, the results on the topics, as well as the amount of time spent and the number of attempts used.

The teacher can upload the test results to an Excel file in the form of an academic transcript of each academic group for the dean’s office (Fig. 6). If necessary, at an additional request, the teacher can get all the necessary information about the results of a particular student for the entire period of his studies.

Figure 6. An Example of Test Results in an Excel File

According to the work program of the discipline “Foreign (English) language”, the results of the first, second and the third semesters are determined as “passed” / “no credit”, the result of the fourth semester is “an exam”. If the student passes the test, then he needs to master 50% (the minimum value) of the tasks, if the student passes the exam, then 0-49% of the mastered material is “unsatisfactory”, 50-66% – “satisfactory”, 67-83% – “good”, 84-100% – “excellent”.

During the 5 years (from 2015 till 2019) (Fig. 7) we have been carrying out an experiment between the two groups of students. The teachers of the first group of 10 students used traditional methods and the learners’ progress was approximately the same. The teachers of the other group of 10 students used distance learning courses and special educational electronic platforms and other E-learning technologies. The results of the learners have grown greatly.

Figure 7. The comparison analysis of the two students’ groups

IV. Conclusion

In conclusion it must be said that the work of a modern university teacher can’t be imagined without using Internet and E-learning especially in teaching a foreign language. Internet gives the possibilities to create real communication situations. It has a great motivation influence on students, helps students and teachers to self develop and self educate, creates teachable conditions to form students’ personality and corresponds modern society requests. But it should be noted that English distance learning educational courses are just a part of the whole educational process, where teachers and in-class work play a very important role and these courses help to reinforce acquired skills.

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