DEVELOPMENT AND IMPLEMENTATION OF EDUCATIONAL SOFTWARE IN TEACHING ENGLISH FOR SPECIFIC PURPOSES

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Abstract

One of the principal challenges facing University teachers of English today is to enhance students' professional language competences and train skillful specialists able to collaborate with their foreign colleagues.

The paper discusses the experience of creating special educational software in order to make the course of English for specific purposes more efficient. The computer application was developed in collaboration with the Bachelor students of Kazan Federal University specializing in Information Technology. It is designed to be a supplement to the textbook used to learn English language for professional purposes. The application is meant to help students of the course consolidate and practice the textbook material in an appealing interactive format. It has been tested within the framework of the English language course in four academic groups and proved to be a useful educational tool. Student survey revealed an immense interest in suchlike educational software implementation, since learning English for professional use is their first priority. Furthermore, it helps the IT students apply their professional knowledge in practice by creating language learning software.

The results of this collaboration with students has shown that joint development and use of educational computer applications is an effective means of learning English for their future profession, as it increases students' motivation and involvement in the educational process and, therefore, contributes to their academic performance. As this language learning application is a pilot project conducted by students, it obviously has some technical pitfalls. However, it has a great potential for further development and successful implementation.

Keywords: student, learning, teacher, education, teaching, collaboration, English, language, software, application, computer, training, professional, information technology, course, knowledge, development.

1 INTRODUCTION

Contemporary digital-age society places certain demands on higher education regarding the training of future specialists. The requirements are conditioned by the technological advancement and the need for highly skilled experts able to keep up with the times in order to enhance their competence. That is why the key objective of the University English language course is teaching students communication skills for specific purposes. The latter provide for both professional and personal growth of the learners, enabling them to successfully participate in research activities and professional communication with foreign colleagues.

In order to achieve this goal English language teachers make ample use of different teaching methods, including traditional approaches along with modern educational technologies, such as computer assisted language learning (CALL), blended learning, task-based learning, etc. Computer technologies applied to English language teaching (ELT) have long proved their effectiveness. There are several factors which justify application of educational technologies in ELT. The foremost one is that they facilitate development and practice of four speech activities (speaking, listening, reading, and writing). Moreover, they can be used to train a specific language skill (pronunciation, grammar, topical vocabulary, etc.). Altogether, computer technologies contribute greatly to students' communication skills improvement. This is particularly true about teaching English for general purposes. English teachers have plenty of web-based applications as well as offline educational software at their disposal. Importantly, the use of educational multimedia in English language learning is getting support from both teachers and students, which can be explained by the following reasons:

1. It is the most convenient and understandable learning format for the youngsters. Immersive computerization has led to dramatic changes in the way the young people perceive and process...
the new information. Modern students are ‘digital natives’ who see the computer as the primary and trustworthy source of knowledge, means of communication and entertainment.

2 It turns the learning process into a game, adding action and variety to it. Thus, computer technologies increase learners’ motivation and boost their academic performance.

3 It is a medium for professional communication in the network communities, which provides for students’ collaboration in doing certain group tasks.

4 It gives the opportunity to individualize the learning process in accordance with the students’ personal demands, needs and possibilities.

Moreover, for students specializing in Information Technologies (IT), computer educational programs constitute a professional interest insofar as electronic devices and the related software are the integral part of their lives and future careers. On the one hand, computer technologies are an excellent tool for language learning. On the other hand, they can induce IT students’ professional competence in terms of creation, design and development of similar programs in their future career.

By contrast, teaching English for specific purposes (ESP) is still mainly based on traditional model, which is limited to classroom activities, aimed at developing reading and translation skills. Although teaching professional English at University is fundamental, it relies heavily on printed textbooks and conventional lessons where the teacher is a ‘sage on the stage’. The utmost innovation in teaching ESP appears to be the integration of the constructivism principles in the learning process: learner-orientation, creativity, collaboration, to name just a few. With this in mind, the typical constructivist activities at ESP lesson include research and projects, role-playing, oral presentations, etc. [1]. However, the lack of technological tools and media applied in ESP courses leads to the fact that they do not always live up to the ambitious standards expected in professional training today.

Despite the growing popularity of educational technologies, most computer programs that exist today either do not correspond to the course curriculum, or are applicable only to a particular English language aspect. As for ESP, there are practically no professionally-oriented multimedia tools which can be used to educate future IT specialists. In this regard, one can talk about the crisis in teaching professional language in the framework of higher education which is caused by the following reasons:

1 Most currently existing textbooks were created about 10 years ago, which is a very long time. A lot of new technologies have emerged for the last decade; so, much of the textbook information has become obsolete or irrelevant.

2 The learning process is much more efficient provided that it is based on empirical study. Unless theoretical knowledge is implemented in practice it does not make sense, as most of it is not mastered by students.

3 Approaches to teaching ESP are largely outdated, comparing with the teaching modes applied to English for general purposes.

Taken together, these factors hinder the learning process efficiency and reduce students’ motivation.

Teacher - Students cooperation, based on common interests and the urgent need to update the ESP course, triggered the idea to create a multimedia application to the ESP textbook for students majoring in IT. The main purpose of this program is to foster learning of professional English, considering students’ demands for the educational material, namely, modern content, interactivity and game elements. The opportunity to apply professional knowledge in practice by developing the educational program was the indirect objective (and advantage) of the project. Notably, this collaborative work helped increase students’ motivation, make learning more efficient, and strengthen good teacher-students relationships.

2 LITERATURE REVIEW

Effective use of computer technologies in ELT is not the issue of the recent times. It has been exciting the minds of the English language teachers ever since the first educational technologies appeared [2], [3]. Teaching English with multimedia has always been considered a worthy alternative to traditional teaching methods. Thus, plenty of books are devoted to the study of the role that multimedia and IT play in the language learning, not to mention thousands of scientific papers and reviews [4],[5]. Nowadays nobody questions the significance of computer technologies in the process of language learning. However, the general attitude to it has changed tremendously. The focus in researches has moved from acceptability of IT in education and comparative analysis of its efficiency compared with
traditional approaches, to the necessity of IT integration in the ELT [6]. As a result, blended learning is becoming the increasingly popular teaching mode these days [7]. Original interpretation of the term suggested combination of traditional face-to-face instruction with online learning. This ‘blend’ is the subject of numerous discussions about the feasibility, positive impact and hidden dangers of the web-based educational resources. Meanwhile, the benefits of the mixed-mode courses are undeniable, which is reflected in multiple related works. Among the most obvious advantages the following are worth mentioning:

1. Blended learning helps to link the learning process with the students’ interests;
2. It turns learning into a creative process;
3. It is able to captivate and motivate even the least interested students;
4. It allows teachers to keep up with the times and upgrade their professional competence;
5. It facilitates not only the learning process but also testing and assessment of students’ knowledge, thus being a useful tool for teachers of English.

However, there is a growing anxiety among the researchers about the growing popularity of such hybrid methods of teaching. The main concern is the recent tendency towards improper use of the blended learning techniques, or even worse, substitution of notions, which has a negative effect on the overall quality of language education [8].

At the same time, there has been a shift in the way blended learning is interpreted today. That is to say, it has become a broader concept implying the mix of two or more teaching methods [9]. Quite often it is a combination of traditional methods with various modern approaches, based on the principle of collaboration between the teacher and students. Collaborative nature of ELT transforms the teacher into the ‘guide on the side’, which, in turn, leads to students’ greater involvement in the learning process, and boosts their self-study and independent research skills [10].

The primary focus of ELT has also changed from purely linguistic to communication skills, since they are practically-oriented. Communicative approach to language learning promotes the spread of task-based learning (TBL) mode, where language is the instrument, used by the students to complete a certain task [11]. TBL promotes cooperation and the ability to apply language in practice. The use of new educational technologies makes this activity easier, more interesting, and as a result, more effective. Importantly, computer technologies appeal to students of language courses, and their positive feedback is illustrated in countless academic papers and researches dedicated to IT applied to learning [12]. Yet, computer assisted learning does not always require radical change of the teaching methods, but improves and facilitates the teacher’s routine work.

However, despite the General enthusiasm about IT employed in ELT, there are a number of factors that can hamper its successful integration in educational process [13],[5]:

1. Insufficient technical knowledge and skills;
2. Reluctance to change, caused by commitment to traditional methods or distrust of the new ones;
3. Lack of technical equipment.

Another key thing to be mentioned is the practical difficulty to create ELT multimedia programs. The dilemma lies in the fact, that English language teachers often do not possess relevant technical skills and knowledge needed for programming. Likewise, the programmers, as a rule, are not competent in teaching languages, and consequently are not able to design and develop software for a certain language course. As a result, there are very few decent programs for ELT in general and practically no software applications compliant with the curriculum of the University language course [14].

In light of the literature review and the analysis of the current situation, there is the urgent need for collaboration between IT specialists and English language teachers for the joint development of proper ELT applications and multimedia programs. New demands bring new opportunities both for teachers and learners [15],[16],[17]. Awareness of this problem prompted the idea to develop the software which can be applied to the course of ESP taught to IT students of Kazan Federal University [18]. As a matter of fact, the project was an experiment, as nothing of the kind has ever been done before. The crucial idea was to create the learning environment, which would enhance learning process in different regards, i.e. involve students in doing a creative task, motivate them for self-improvement, revise the language material, increase their communicative and professional competences, and teach them
cooperate. Besides, it turned out to be a great experience of teacher-students mutually beneficial collaboration.

3 METHODOLOGY

Nowadays various approaches to ELT are implemented in the form of computer programs. Prior the development of the new ESP software program, the research of the currently available free applications has been conducted to find out what kind of software will be in demand, what application features are worth borrowing, and how to avoid the common mistakes.

It turned out that although programs of this kind are quite numerous, most of them do not have a wide range of functions. All the educational programs can be divided into several categories:

1. programs focused on boosting vocabulary (it is the most popular and widespread category). They offer exercises or tests, helping the users learn new words (for example, "Language Study");
2. dictionaries and translators ranging from small, focused on particular topics, to large-scale projects, such as PROMT;
3. collections of grammar exercises. These programs introduce English grammar rules and offer users grammar tests or exercises to study and revise the material. One of the most popular programs of this kind is "English Grammar in Use";
4. spelling trainers, in which the users have to either correct the given words and phrases, or fill the gaps.

There are also mixed programs, which cover different aspects of the English language, and offer various exercises. These kind of programs are rarely available free of charge. Besides, almost all of them were created more than a decade ago, which causes the problems with running the application on computers with a new operating system.

The number of appropriate software applications was significantly narrowed due to the fact that most commonly used operating systems today include Windows 10 and Windows 8. About ten programs with positive reviews and high ratings have been found, and only two of them successfully run on Windows 10.

Nonetheless, it is easy to understand why educational software is not very popular today. There is no need in desktop programs or textbooks, since the Internet users have plenty of online educational resources and mobile applications at their disposal, which allows for interactive web-based language learning. However, they all require the Internet access, and in this way often distract from the learning process.

Thereby, the new ESP program developed as part of the project should meet certain requirements:

1. It does not need access to the Internet; a user is able to study offline;
2. It is portable, light and is easily transferred from one computer to another;
3. It complies with the newest Windows operating systems;
4. It is focused on ESP for students majoring in IT, which is a distinguishing feature of the application, as there is no software of the kind so far.
5. It is based on the textbook "Infotech English for Computer Users" [18], supplements and updates the stale data, helps consolidate the textbook material.

The development language used in this project is C++, a compiled programming language. The programs written in this language and compiled in the development framework do not need to install additional software, programming environments or interpreters for further work.

The authoring environment is VisualStudio 2015. The application is created in WinForms - an application programming interface (API), which is responsible for graphical user interface and is a part of Microsoft .NET Framework. This interface simplifies the access to the Microsoft Windows interface elements.

This development technology was chosen deliberately, since it is considered to be the most intuitive and intelligible insofar as it is taught to IT students within the framework of ‘Operating systems and Programming’ course.
The application is logically structured. The home page contains a short welcome message and a link to the table of contents listing all the available chapters. To select the chapter you need to click on its name. The link will open a new window containing 5-6 unit tasks. The typical application unit includes:

1. a text containing basic information on the topic;
2. a reading comprehension task (true/false statements);
3. gap-filling exercise;
4. matching exercise (key terms and definitions);
5. multiple choice task;
6. drag-and-drop exercises;
7. reordering exercises.

The principle difference of this application from the textbook is that the content is uniquely-designed for each topic by the project authors. All the units are interconnected as they contain parts of one story split into unit texts. Although the narration is not distinctly academic, it implicates the key terms and information on the topic. This approach is supposed to make the learning process funnier and easier, as the new information presented informally is better remembered.

The program was tested by the second-year students of the Institute of computational mathematics and information technologies of Kazan Federal University. All the participants were divided into two groups, one of which used the computer program to study the ESP topic. Both experimental groups were further tested and surveyed.

4 RESULTS

At the final stage of the application development, testing of the product was conducted. To examine the effectiveness of the program there were selected two groups of students studying ESP in the framework of the University course and two groups, not studying professional English. All the participants have approximately the same language level – B1-B2 (Intermediate). The groups were mixed and then divided into two new groups.

The topic being tested (Internet Security [18]) had not been previously studied in the classroom. One group (29 students) had studied the textbook material on the topic with the teacher, before they had to do a follow-up test. The members of the second group (30 students) had studied the same material in two steps: firstly, in the classroom using the textbook, and after that using the computer application. Having learnt the topic this way they did the same test.

The results of the test proved to be better in the group of students that used the ESP application to consolidate the textbook material (80% compared to 62% in Group 1). By contrast, those who were restricted to using only the textbook, made more mistakes in the test (38 % compared to only 20% in Group 2). All in all Group 2 demonstrated better knowledge of the topic.

Coupled with the test, the survey of the participants of the experiment was conducted. About 40% of respondents gave the application the highest mark. Less than 5% found it useless. The survey revealed that the application appeals to the target audience (IT students, learning ESP), and makes a good supplement to the ESP course taught at the University. It increases academic performance, helping to understand and remember the new learning material.

5 CONCLUSIONS

Based on the data obtained the following conclusions can be drawn.

Firstly, using the application as the supplement to traditional ESP course has positive results. It is no secret that successful English language learning can be achieved by constant practice. The ESP application developed within this project allows for extra language practice in order to boost students’ language competences.

Secondly, the application demonstrated a convenient task format, which was highly appreciated by the survey respondents. Students were attracted by the original introduction of the new material, instant results checking, and self-sufficiency of the software, as it does not require the use of extra tools.
And thirdly, the structure of the application implies that the exercises can be done repeatedly. It helps fully comprehend the learning material, as well as revise and consolidate the knowledge.

On the other hand, the test revealed some limitations of the software. It is required to make the program run properly on devices with the architecture different from that of the University desktops. The content of the program also needs to be improved. At this stage only one unit of the textbook was converted into the application. Adding other units, comprehension tests and a glossary constitute the future plans for the program development. Furthermore, there is an intention to improve compatibility of the application with the other devices as well as create a mobile version.

All things considered, the first stage of the application development has given promising results. Undoubtedly, its further development will contribute to the successful learning of ESP by the students of Kazan Federal University (Russia) majoring in IT.

REFERENCES


