ICT Using in Integrated Teaching Management Core Courses in a Foreign Language

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Abstract. The paper deals with the practical importance of using ICT in education which is difficult to overestimate. The research studies the process of integrated teaching management core courses in English using ICT with the purpose of developing the technology of integrated building of professional and foreign language competences using ICT. The authors analyze the ways of the effective ICT use in the integrated teaching the courses "Corporate Social Responsibility" (in English) and "English for professional purposes" and statistically prove their effectiveness.

The developed integrated model using ICT has proved the synergy effect allowing the effective acquisition of professional information on the one hand and the development of both professional and foreign language skills on the other hand, what ensures building the professional competence as a whole. The results of the experiment can be used in developing of the recommendations as to using ICT in the integrated teaching of core courses and foreign language to future managers.

Keywords: Information and Communication Technology, Integrated Learning, Integrated Teaching Model, Professional Competence, Foreign Language Communicative Competence.

1 Introduction

The tendency of scholars raising interest in the problem of implementation of Information and Communication Technology (ICT) in education process is observed in Ukraine under the development of information society and the modernization of the system of higher education. The solution to this problem is the system of integrated teaching of core courses and a foreign language using ICT at the lessons and for independent work.

The requirements of the modern education to build the multiple personality demands the rationalization of the process of both professional and language teaching future managers on the basis of innovative efficient educational technologies stipulated by the contemporary requirements and real conditions of the higher school.

The authors of modern researches have investigated different aspects of the problem of ICT implementation in education. Communicative and speech characteristics of informational media of communication were studied by V. Dronov [1], M. Yevdokimova [2], S. Zenkina [3], T. Koval [4], O. Pankratova [5], I. Rozina [6], H. Selevko [7], T. Lawrence [8], P. Wallece [9], M. Warschauer[10] and others. The didactic characteristics of ICT have been considered by T. Mooij [11], E. Polat [12], M. Biechele [13], and others. The problems of adult learners and technology based learning have been touched upon in the works of L. J. Ausburn [14], S. K. Bajt [15], M. Johnson [16], and others. J. Lo Bianko [17] considered different aspects of using ICT in literacy learning and case studies have been considered. The Ukrainian researchers Yu. Bryta [18], Ya. Dyachkova [18], N. Mayer [18], Ya. Krapchatova [18], V. Chernysh [18] have studied the perspectives of ICT using for building the foreign language communicative competence in different types of speech activity.

Equally important it is to consider the negative factors accompanying integrated teaching using ICT. B. El Mansour and D. M. Mupinga [19] note rigid schedule (as opposed to the on-line courses) and technical problems among the most frequently mentioned by students. J. Nworie and N. Haughton [20] consider the list of unanticipated effects including “technology-supported cheating opportunities; communications-related distractions from emails, instant messaging, computer games, web surfing, and other "personal projects;" lack of engagement with the instructional setting caused by the substitution of classroom experiences with pre-recorded and downloadable class materials from various sources”. E. Zhu, M. Kaplan [21] P. Demian, J. Morrice [22] touch upon the negative influence of ICT on teaching process.

The analysis of the researches conducted in this field, the regulations and teaching materials, as well as observations of the teaching process in the higher school have allowed to define a number or contradictions:

- between the requirements of the society to the quality of professional education in management, the needs of higher educational institutions in scientifically and methodologically grounded materials for the efficient educational process using ICT on the one hand and the lack of the developed materials for teaching core courses and foreign language on the other hand;
- between the new requirements of educational programs to build competences within the amount of ECTS and few classroom hours for every.

The topicality of our research is grounded on the urgency of resolving the above mentioned contradictions and the need in investigations dedicated to the implementation of ICT based integrated learning into the management degree program.

The practical importance of using ICT in education is providing autonomy, mobilizing of learning abilities of students, creating conditions for individual learning and developing of active position in learning activity. Using ICT in teaching subjects in English opens new methodological perspectives of developing degree and subject programs for future managers.

The object of the study is the process of integrated teaching professional subjects in English using ICT to future managers. The subject of the study is the technology of

integrated building of professional and foreign language communicative competences using ICT.

The aim is the analysis of the effective ICT use in the integrated teaching the courses “Corporate Social Responsibility” (in English) and “English for professional purposes”.

The following theoretical and empiric methods have been used in the research: critical analysis of resources, current programs, education regulations, manuals; method of observation, questioning of students and professors to reveal their attitude to different aspects of ICT using in higher school; simulation method to develop the education model within the standard amount of ECTS credits; education experiment and statistical processing of data, obtained in the experiment to check the effectiveness of ICT using in education.

2 Organization of Educational Environment Using ICT

The development of the education process at higher school in the information society is connected with using of virtual environment [18]. According to M. Nimatulayev [23] the advantage of education organization using ICT environment is the opportunity to perform the approach based on individual activity, namely creating the conditions for self-learning and personalization of the learning process of every student. I. Rozina [6] states that learning using ICT environment is the brand new paradigm based on the functional effectiveness of ICT and built on the e-learning culture comprising the positions of an e-learner and an e-teacher

Following the opinion of S. Zenkina [3] we consider the ICT environment as a complex of electronic methods of teaching and communicating using of which allows performing the gradual learning activity that builds both professional and foreign language competences of a student. V. Dronov [1] believes that the modern ICT environment is to meet the requirements of students, to be able to adapt to different educational situations and to possess the corresponding content and structure. That is why we have generalized the experience and implemented the following modern information and communication technologies:

- Information education technologies (search engines, educational Internet portals and services Web 2.0, education webinars, electronic manuals, computer educational programs, audiovisual and multimedia materials, etc);
- The Internet oriented teaching technologies (education programs, presented in the Internet, on-line tests, on-line courses, LMS Moodle);
- Activity oriented technologies (projects, group work facilitation, professional business game, problem solving, etc);
- Case technology based on using the cases in audiovisual and multimedia sources in independent study;
- The foreign language integrated learning technology (creation of content and information interdisciplinary connections to build the foreign language competence, the technology of integrated building of professional and language competences, etc).

Special attention in the process of organization of independent learning should be paid to web technology / the Internet technology, especially different communication opportunities such as

- synchronous communication - Internet Relay Chat (IRC), ICQ, Skype, Viber;
- asynchronous communication – email, messaging;
- multimedia technologies – communication using visual, sound and video files.

The effective education process presupposed the organization of the control provided by teachers and the opportunity for students to get regular consultations, to exchange information, to communicate and to jointly perform different projects.

The Internet social services have proved their expediency as they have completely changed the education process by its personalization and practice orientation. The scholars determine the following important for education purposes characteristics of the Internet services as personalization, cooperation of users, web interaction, information accumulation and content modification [18]. The following services can be implemented in education process: Blog, Social networking, Wiki, Bookmarks, Webquest, Podcast, Twitter, Skype, Google Docs, Google Maps, You Tube, Conversational arenas, etc.

The system of distance learning is supported by different LMSs. ATutor, Dokeos, ILIAS, Moodle are among the most effective since they provide the open access to their services [18]. There are some other platforms that are widely used: Acollab, Claroline, Colloquia, Ganesha, LAMS, Sakai. LMSs allow students self-control, individual communication, combination of traditional and computer learning tools. In general they positively affect building professional foreign language competence in the process of independent work.

3 The Proposed Model of Integrated Learning Using ICT

The proposed model of integrated teaching professional courses in English using ICT was created on the basis of major course “Corporate Social Responsibility” (taught in English) and the course “English for professional purposes” for the second year students of specialty 073 “Management” of Zaporizhzhya National University considering the following amount of credits and classroom hours: the course Corporate Social Responsibility – total hours 150 (5 ECTS credits), classroom hours – 48, the course English for Professional Purposes – total hours 90 (3 ECTS credits), classroom hours – 32.

While developing the model the authors came to the conclusion that two variants (A and B) can be implemented depending on different ICT used in integrated teaching the professional courses and the foreign language.

The courses in our experiment are part of the curriculum of bachelor degree program in management. The main goal of the experiment was to determine the level of influence of ICT on the quality of learning.

Variability of the experiment is presented through two variants: A and B models of integrated teaching using ICT. Invariables of the experiment are the groups (EG1,

EG2, EG3, EG4) composition: number of participants (13 students in each group) and their knowledge level; program content and study material; the control content before and after the experiment; time and duration of the experimental learning; criteria of checking of professional and foreign language competences in all groups; teachers in each group.

Our investigation was held in the third semester of two consecutive academic years (2016-2017, 2017-2018). The total amount of students, that took part in the experiment – 52 students. The questionnaire that was held among the students revealed some of the strongest stimuli (from the students' point of view) for the development and implementation of ICT into the learning process. Having prioritized these stimuli we obtained the following list:

1. Building of professional independence.
2. Wider opportunities to successfully finish the course.
3. Development of competitiveness.
4. Academic mobility.
5. Knowledge acquisition.
6. Adaptation of new forms of activity.
7. Changing of communication mode between the subjects of the process.

Table 1. A and B variant of the integrated teaching model using ICT.

Course	Information communication technologies									
	Information education resources	Electronic manuals	Podcasts, multimedia resources	On-line control tasks	Special on-line courses, webinars	On-line consultations, chats, Viber	Project technology, web-quests	Case technology	Facilitation, professionally oriented business games	LMS Moodle
Variant A										
Corporate Social Responsibility (in English)	+	+	+	+	+	+	+	+	+	+
English for professional purposes	+		+	+		+	+	+	+	+
Variant B										
Corporate Social Responsibility (in English)	+		+	+				+	+	+
English for professional purposes	+		+	+				+	+	+

The learning management system (LMS) Moodle has been used as the platform for implementing the ICT into the courses programs. The choice of LMS is predeter-

mined by the following opportunities that are of paramount importance for our research: joint activity of all subjects of the learning process; development of different types of control tasks; design of different types of tasks; using different languages; holding on-line seminars; organization of the forum and others.

The programs of the courses "Corporate Social Responsibility" and "English for professional purposes" have been developed within the same structural chart providing the opportunity to integrate two courses into one system. Such structure gives the opportunity to educators to regulate the learning process in defining the goal, planning, performing, evaluating, and correcting. The design of the courses programs presupposes the following main sections each including the ICT:

- Section 1 – introduction and preliminary acquaintance with the subject;
- Section 2 – theoretical knowledge and practical tasks to facilitate learning process;
- Section 3 – knowledge control;
- Section 4 – referral system.

Section 1 - introduction and preliminary acquaintance with the subject. The tasks to be solved within this section are the following: to motivate the students to take the course, to awake their interest in the content of the subject as well as the form of its presentation; to get student ready for the independent use of multimedia manuals and the Internet resources. The main elements of this block are the course presentation and the course program. The courses presentations include information education and multimedia resources.

Section 2 – theoretical knowledge and practical tasks to facilitate learning process. The tasks to be solved within this section are the following: the opportunity to change the content of the course, the form and order of its presentation depending on the level of students' knowledge, their personal and psychological peculiarities of acquiring information; the provision of effective personalized dialogue among all participants of learning process.

The main element of this section is electronic manual. We have already developed and put into use the electronic manual for the course "Corporate Social Responsibility". The main characteristics of this manual are the following: didactic fullness of the presented content; division into topics, material presentation compactness; multimedia applications, interactive fragments; practical tasks on every topic; questions (tests) for self-control on every topic; questions (tests) for final control or self-control; referral system, prompts; opportunity to use the manual off-line. The electronic manual for "English for professional purposes" is being developed. For the purpose of the experiment we used the texts on the topics relevant to the course "Corporate Social Responsibility" (e.g. stakeholders' analysis, social capital, sustainability, etc.) and defined the language material to develop the foreign language competence. Certain exercises and tasks based on this language material are presented in Moodle. The course program stipulates the study of the case on Corporate Social Responsibility (a team project for independent work that is to be presented in the form of PPT presentation with the elements of discussion encouragement through the use of different facilitation techniques). As part of their individual work the students are supposed to register for an on-line relevant course in English.

The next element of the section is lectures for the course “Corporate Social Responsibility”. Since we use the integrated learning system the content of the lectures is presented in Ukrainian and English in the form of PPT presentations. The lecture notes allow students to preliminary get acquainted with the problem to be discussed at the lecture as well as to obtain the knowledge necessary to occupy the proactive position and to hold the efficient dialogue at the lecture. It is worth to note that presenting the lecture notes in English pursues several goals. It promotes building the skill of using the English language as an instrument of information search; gets the students with different level of English ready to listen to the lectures in the English language; promotes building communicative competence of students.

Bilingualism in lecture notes receives its logical development during seminars and round tables. All the seminars tasks are of search character. Students are offered to find the solutions for practical tasks, to study the experience of different companies, to analyze the corporate reports on sustainability and social responsibility, presented on the websites of companies. The English language segment of the Internet opens wider opportunities in terms of obtaining information, especially in such novel for Ukraine field as Corporate Social Responsibility.

Section 3 – knowledge control. The tasks to be solved within this section are the following: to reveal knowledge initial level; to detect individual abilities of knowledge acquisition; to individualize the learning and control processes, what inevitable increases the quality; to efficiently manage the learning process.

The following bar charts demonstrate mean success indicators (blue bars – before the experiment, red bars – after the experiment) in all groups participating in the experiment presented as the percentage of the fulfilled tasks.

The main difference of the knowledge control procedure using ICT is the opportunity of the well-timed development of the necessary measures of correcting the learning process to increase its quality. The following are the advantages of the knowledge control using ICT:

1. The main characteristic is making more time available for the teacher. This time can be spent on individual work with students, the definition of a particular approach to every student based on the fulfilled tasks (a placement test “English for professional purposes” or an essay “Corporate social responsibility”).
2. The students survey revealed the priority characteristic of the control using ICT being the elimination of the subjective factors and the creation of equal conditions for all participants of the process.
3. Both professors and students noted the increase of individualization in learning process. Students have the opportunity to choose the most suitable method of knowledge acquisition and the most convenient way of control tasks fulfilment. They can repeat the study and control procedures several times if necessary what promotes the development of the individual work skills.
4. The student is able to obtain the prompt information about the knowledge acquisition results fulfilling self-check tasks. This characteristic is very important both for professors and students providing the opportunity to timely correct the learning process and obtain the necessary results.

5. One of the most important advantages is the improvement of psychological situation due to availability of information from different sources during learning and control processes, the opportunity to fulfil the tasks in convenient time and comfortable settings, the fulfilment of team projects.

The main element of the control is testing. It is worth mentioning that the traditional control procedure can provide only the statement "passed - failed", while the procedure of the computer testing presupposes additional acquisition of the content due to provision of several attempts and the system of prompts included in every test.

Section 4 – referral system. The tasks to be solved within this section are the following: facilitation of the content acquisition; increase of interest in the subject; building students' information culture; opportunity to join the world information community.

This section comprises the glossary, the list of recommended literature, the list of the websites providing on-line courses and the list of useful Internet sources. The glossary includes the main terms to facilitate the acquisition of the content. The main criteria for including the source into the recommended list is professionalism and simplicity in rendering information, building search and research skills, development of the interest in the subject. One more element of the referral system is the navigation system developed in the electronic manual.

4 The Verification of the Effectiveness of Using ICT in Education

The analysis of the results of control before the experiment showed that the level of professional and foreign language competences was inadequate (EG1 – 67,9%, EG2 – 67,7%, EG3 – 68,1%, EG4 – 67,0%). The results of the control after the experiment proved that the students of all four groups achieved and excelled the minimum enough level of competences (EG1 – 90,3%, EG2 – 89,9%, EG3 – 88,2%, EG4 – 87,6%).

The following bar charts demonstrate mean success indicators in all groups participating in the experiment presented as the percentage of the fulfilled tasks.

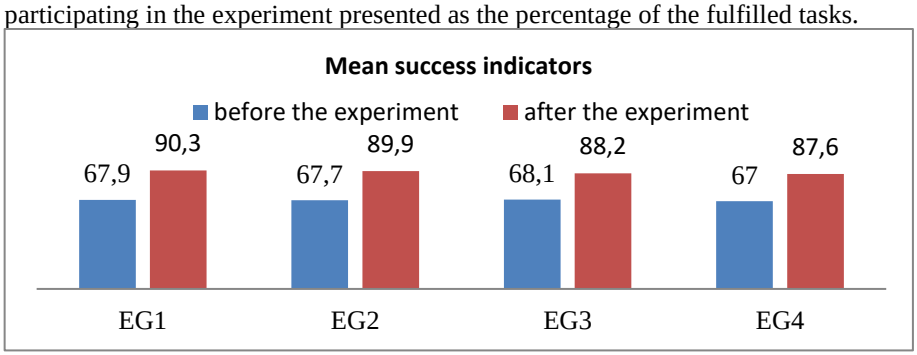

Fig. 1. Professional foreign language communicative competence before and after the experiment.

Integrated teaching core course "Corporate Social Responsibility" in English using ICT caused higher level of competence in all experimental groups, what proved the general effectiveness of the proposed model. Though the competence level coefficients are higher in EG1 and EG2 (90,3% and 89,9%)which were taught using variant A. This fact has brought us to the conclusion that variant A is more effective.

The data were processed using the methods of statistical analysis. The results of the competences levels were united and the average quality results for EG1, EG2 ($\bar{x}$) and for EG3, EG4 ($\bar{y}$) were calculated: $\bar{x}$=67,8, $\bar{y}$=67,5 before the experiment and $\bar{x}$= 90,1, $\bar{y}$=87,9 after the experiment.

The sample estimates of the tests results allowed defining the level of professional and foreign language competences before and after the experiment. We admitted that the mean indexes of the competences levels are distributed according to the normal law.

Using the experiment data the sample mean values and the sample values of dispersion were determined as following:

- before the experiment

$$\bar{x} \approx 67{,}8, \quad \bar{y} \approx 67{,}5 \tag{1}$$

$$S_x^2 \approx 85{,}12 \quad S_y^2 \approx 58{,}24 \tag{2}$$

- after the experiment

$$\bar{x} \approx 90{,}1, \quad \bar{y} \approx 87{,}9 \tag{3}$$

$$S_x^2 \approx 41{,}11 \quad S_y^2 \approx 67{,}5 \tag{4}$$

To compare expectation values *M[X], M[Y]* the t-distribution with several degrees of freedom $k = n_x + n_y - 2$ [20] was used.

For the confidence probability $p = 0{,}95$ the critical value from the table of Student's t-distribution is $t_{50;0,05} = 2{,}00$ [24].

The calculated value before the experiment $t \approx 0{,}11$ was lower than the critical table value $|t| < t_{50;0,05}$ (0,11<|2,00|). This proves the absence of deviations of mean values before the experiment. After the experiment the calculated value ($t \approx 3{,}2$) exceeded the critical table value $|t| > t_{50;0,05}$ (|3,2|>2,00). Since the calculated value *t* exceeds the critical table value we can conclude that the experimental teaching of the students of experimental groups on the basis of integrated model using ICT has influenced the expected level of professional and foreign language competences.

Using F-test to check the hypothesis about the equality of dispersions of random variables X and Y allowed the confirmation of the fact that the different initial level of professional and foreign language competences before the experiment changed greatly after the experiment, since the dispersion of the results decreased.

The table of F-distribution $F_{(\alpha,k_1,k_2)}$ for the level of significance $\alpha=0{,}05$ and the degrees of freedom $k_1=k_2=n-1=26-1=25$ is equal to $F_{(0,05;25;25)} = 1{,}96$ [24]. The calculated value $F = \frac{67{,}5}{58{,}24} \approx 1{,}3$ for EG3 and EG4 do not exceed the table $F < F_{(0,05;25;25)}$

(1,3<1,96). Since the calculated value $F = \frac{85,12}{41,11} \approx 2,07$ for EG1 and EG2 exceeds the table one $F > F_{(0,05;25;25)}$ (2,07>1,96), the hypothesis about the equality of dispersions is withdrawn, that is the dispersion level changed greatly.

The use of F-test allowed the confirmation of the fact that after the experiment the level of dispersion of the results of building the professional and foreign language communicative competences among the students of experimental groups has significantly decreased. This fact proves the stable competence level and consequently supports the statement about positive influence of the developed model of teaching using ICT. The dispersion of the random variables X and Y prove that the results in groups EG1 and EG2 (taught according to variant A) are better compared to the results of groups EG3 and EG 4 (taught according to variant B).

The analysis and comparison with results of contemporary researches in the field of integrated learning using ICT and the own teaching experience at higher education institution prove the necessity of interactivity of the teaching process to provide communicative interrelation of all participants, self-control and self-correction. The second important characteristic of teaching disciplines in English using ICT is their technical characteristics and didactic opportunities for lectures, seminars, practical classes and individual work. Using ICT in teaching subjects in English opens new methodological perspectives of developing degree and subject programs for future managers.

The answers of the students to the open-ended questions revealed some negative factors that could decrease the efficiency of teaching process. Some students consider the instructions delivered in Moodle insufficient and require more personal instructions. Other students feel that using of the Internet during classes distracts them from the topic of the class. The ambiguous opinions provided by the students requires further interpretation and more profound research that can become the grounds for the development of teaching techniques based on using ICT.

5 Conclusion

The research attempted in a comprehensive way to solve the problem of the rationalization of the process of both professional and language teaching of future managers on the basis of innovative efficient educational technologies stipulated by the contemporary requirements and real conditions of the higher school education.

The solution of the practical tasks of the contemporary education with the increasing role of individual work the authors connect with implementation of ICT at the lessons and for independent work, development of new principles, strategies and methods of teaching within the framework of integrated learning. These novelties can be applied when teaching professional subjects and foreign language and will provide effective learning process aimed at acquiring the necessary competencies.

The research has allowed generalizing the experience of implementation of contemporary innovative technologies in the integrated teaching of the core courses and foreign languages. The use of ICT in didactic materials provides great opportunities for all participants of the education process, consequently leading to quality im-

provement. The developed integrated model of the course programs “Corporate Social Responsibility” and “English for Professional Purposes” using ICT has proved the synergy effect allowing the effective acquisition of professional information on the one hand and the development of both professional and foreign language skills on the other hand, what ensures building the professional competence as a whole. The effectiveness of the model was experimentally proved after the processing of statistical data obtained in the course of the experiment. The results of the experiment can be used in developing of the recommendations as to using ICT in integrated teaching of core courses and foreign language to future managers.

Considering the overall positive result of our experience we believe that negative factors are to be given a profound research and thorough analysis. In general efficient ICT using requires great efforts of the faculty in avoiding the negative factors.

Use of ICT in the learning process should be rational and carefully designed depending on the type of lesson (lectures, seminars, practical classes or individual work), the specifics of the discipline, the goals and objectives of the teaching. Being not comprehensive, the conducted research outlines the perspectives of further investigating the crucial aspects of the organization of teaching using ICT.

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