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Exploring the experience of integrated teaching of the management core courses in a foreign language based on ICT use

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Abstract. The authors search the solution to the practical tasks of the contemporary education characterized by the increasing role of individual work in implementation of ICT at the lessons and in the independent work, the 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 the effective learning process aimed at acquiring the necessary competencies. The research discusses the process of integrated teaching using ICT and defines the organizational and educational conditions of integrated building of professional and foreign language competences using ICT. The authors generalize the experience of implementation of contemporary innovative technologies in integrated teaching of the professional subjects and foreign languages and analyze the ways of the effective ICT use in the integrated teaching of the management core courses in a foreign language. The content analysis performed in the research provides the basis for classification of both positive and negative aspects accompanying ICT use in education.

1. Introduction

Ukraine is going through the process of reforming the national system of higher education. This process is accompanied with radical changes in pedagogical theory and practice of the educational process. Modern society is becoming increasingly dependent on all forms of technology for daily functioning. The unification of the system of higher education in Europe and the development of education programs that meet the requirements of the international standards put forward the task of the professional training of specialists with the level of the foreign language competence that corresponds to the world standards and provides the opportunity to use a foreign language in their further professional activity for creating business contacts and building cooperation with specialists in the related spheres.

2. Actual scientific researches and issues analysis and the research objective

Modern researchers dwell upon multiple aspects of ICT implementation in education: E-learning tools and technologies (Clark, Mayer [6]; Fu, [9]; Modlo et al, [18]; Rösler, [23]; Symonenko et al [26]; Triakina et al [27]), communicative characteristics of informational media of communication

(Lawrence, [15]; Hernandez, [10]), didactic opportunities of network technologies (Bondarenko et al, [3]; El Mansour, Mupinga, [7]; Fong, [8]; Katz, [11]; Kazhan et al, [12]; Kiv et al, [13]; Merzlykin et al, [16]; Nickerson, [19]). The Ukrainian researchers (Chorna et al, [4]; Pavlenko et al [22]; Symonenko et al, [25]) have studied the methodological grounds of ICT using for building the foreign language communicative competence in different types of speech activity. The Ukrainian psychologists and educators consider that the influence of informational technologies on personal development is impossible to classify as definitely positive or negative (Konovalenko, Nadolska, [14]; Shmygol et al [24]; Yudina et al [28]).

The current situation in the field under consideration puts forward the following contradictions:

– between the tendency of the swift growth of the role of ICT in the educational process stipulated by the development of the informational society and the upgrade of the system of higher education on the one hand and some unsolved aspects of the general problem of ICT use in efficient management of the educational process on the other hand;

– between the radical change of the educational approaches, transition from separate pedagogical functions to the systematic ones, from the standard techniques to the innovative, creative and personality oriented ones on the one hand and the ambiguity of the researches in terms of the influence of ICT on the student's personal development on the other hand.

Our research is directed at resolving the above stated contradictions. The aim of the research is to analyze the experience of ICT using in the integrated teaching of the subjects "Corporate Social Responsibility" (in English) and "English for Professional Purposes" and to evaluate experimentally the efficiency of ICT for integrated building of professional and foreign language communicative competences.

The aim is to be achieved through the fulfilment of the following tasks:

– to generalize the experience of implementation of contemporary innovative technologies in integrated teaching of the professional subjects and foreign languages;

– to define the organizational and educational conditions of integrated building of professional and foreign language competences using ICT;

– to analyze the didactic opportunities of ICT in integrated education programs in English;

– to develop the model of the education programs of the disciplines "Corporate Social Responsibility", "English for Professional Purposes" using ICT;

– to verify through the experiment the effectiveness of the developed model of the education program and to use the qualitative and quantitative analyses;

– to analyze the results of experimental teaching in terms of positive and negative effect on building professional and foreign language communicative competences and personal development of students;

– to determine the effective and ergonomic approaches to ICT using and to develop the recommendations as to its using in the integrated teaching of professional subjects and foreign languages to future managers.

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, content analysis of teachers' answers to open-ended questions describing their experience with ICT use in educational process..

3. Organization of educational m-learning environment using ICT

The implementation of ICT in educational process requires the creation of m-learning environment that depends on different factors – technical, psychological, methodological. Technical factors are predetermined by the infrastructure of a certain educational institution and PDAs used by students and professors [17]. The great choice of available ICT tools for different purposes determines their insignificant influence on the character of m-learning environment. The factors that we consider more

important are teaching and learning competences of the participants of the educational process as well as their psychological readiness to accept the novelties.

The negative factors of ICT implementation and m-learning environment should not be underestimated. The researchers note rigid schedule (El Mansour, Mupinga, [7]), technology-supported cheating opportunities and communications-related distractions (Nworie, Haughton, [21]), lack of engagement (Zhu, Kaplan, [29]).

Putting an accent on didactic and methodological advantages of ICT use in the process of integrated building of professional and foreign language communicative competence we agree with the opinion of the scholars (Nikolayeva, Mayer, Chernysh, [20]) who accept the existence of disadvantages in the use of the Internet technologies:
  – the possibility to obtain the outdated or unprofessional information;
  – the author's bias as to the issues presented in hypertexts;
  – the limited amount of professional editions in open access.

There is no doubt that the model of the integrated teaching of core disciplines and foreign languages is to consider the drawbacks of ICT use in order to minimize its negative influence on the process of building of the professional foreign language communication competence. The solution of the practical tasks of the contemporary education is connected with the implementation of modern innovative educational technologies, development of new principles, strategies and methods of teaching within the framework of integrated learning.

The use of m-learning environment along with other IC technologies is used for the organization of educational process that does not depend on certain place and time. PDAs allow students to access educational resources, to connect with other students, to create educational content in class and outside the University. It is undisputable that technologies provide new learning opportunities to students, namely, increasing the information flow, speeding up its processing and memorizing, compensating the absence of natural foreign language environment, following the principles of visualization, interactivity, feedback.

For example, the use of Podcasts in the educational process allowed the use, spread, revision and listening to audio and video materials in the Internet. Due to their didactic qualities – audio nature, multimedia characteristics, interactivity, efficient space and time organization convenience of use and availability – podcasts increased the educational opportunities of both teachers and students. The use of podcasts helped the development of listening and speaking skills, but its influence on reading and writing skills is relatively insignificant. This resource was very useful for improvement of the aural perception of the English speech. During listening the students performed the tasks directed at developing media literacy, learning autonomy and creative abilities.

Chats were used mostly for the development of reading and writing. Chats allow the organization of fast communication among students and professors, discussions of resources and common projects. Social networks were used by professors and students to create educationally oriented groups. This tool was used not only for communication but also for educational purposes; this allowed the improvement of reading and writing skills as well as the ability of working in a group. The Viber application for smartphones on platforms Android, iOS was useful for the improvement of all types of speech skills as well as for the development of professional competence.

Project technology, web-quests, case technology, facilitation, professionally oriented business games were used in the integrated teaching of core disciplines and the English language. These technologies are efficient tools for the organization of individual and class work; they allowed the improvement of the foreign language competence in all types of speech activity as well as professional competence, the development of logical thinking, ability of reasoning and persuading counteragents. One of the elements of professionally oriented tasks was solving professional problem cases based on the analytical research using informational resources, creating multimedia presentation, organizing business game.

The results of web-quests were realized through a multimedia presentation the aim of which is to present the students' research activity. Participation in web-quests developed the ability to think independently, to solve professionally important problems, to forecast the results and possible consequences of different scenarios, to determine cause – effect relations. Through the use of the

multimedia resources students met their specific needs and participated in collaborative projects that promote communication with peers in both their classrooms and throughout the global community.

The following professional students' skills have been developed: information search, key words highlighting, topic / problem definition, extraction of the main information, presenting and summarize the obtained information.

The researches in the problem of the provision of interactivity of educational means based on ICT define the following indicators of interactivity: non-linear access to educational information; efficiency of feedback in both directions; communication among the subjects of educational process; adaptation of the education system to student' individual needs; implementation of the educational strategies in the individual activity.

Special attention in the process of organization of independent learning should be paid to web technology / the Internet technology, especially its different communication opportunities that can be used for control organization, joint project performance, and information exchange. M-learning environment involved in the model includes both university and personal learning environment for professors as well as for students. Since the proposed integrated model was to realize complex and competence approaches to the educational process and involves both class and individual out-of-class work, the exclusion of ICT technologies from variant B was impossible.

4. Implementation of the integrated teaching system

The courses in our experiment "Corporate Social Responsibility" and "English for Professional Purposes" are part of the curriculum of bachelor degree program in management. The main goal of the experiment was to define the level of influence of ICT on the quality of learning and to determine the most efficient integrated educational model with the use of ICT.

The hypothesis of the experiment: to achieve a high level of professional foreign language communicative competence in the process of professional education of future managers is possible through the integrated teaching of a foreign language and core disciplines in a foreign language using ICT in the class and during out-of-class learning activities guided by the teacher having chosen the most efficient educational model.

Our investigation was held in the third and in the fourth semesters 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 educational process. Having prioritized these stimuli, we obtained the following list: building of professional independence; wider opportunities to successfully finish the course; development of competitiveness; academic mobility; knowledge acquisition; adaptation of new forms of activity; changing of communication mode between the subjects of the process.

Variability of the experiment is presented through the 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.

The choice of control group without ICT is not considered since the important element of the educational process is students' individual out-of-class work that is based on active use of different informational resources and technologies. The object of the experimental check within the discipline "English for professional purposes" was the determination of the level of professional foreign language competence in the four types of speech activity. The use of ICT in development speech skills are presented in table 1. The series of tests determined by the control purpose and the speech skills nature was performed.

The evaluation of speaking skills was carried out according to the following criteria:

1. The degree of relevance to a certain topic or situation (relevance to a topic, realization of communication intention).

2. The completeness of the covered topic, situation (topic interpretation, topic coverage).

3. The level and the characteristics of improvisation in utterances.
4. Adequate use of vocabulary and grammar (correct use of language means).
5. The correspondence of the volume to the task.
6. The speed of speech.
7. Correct understanding of the questions and the speed of response.

Table 1. ICT use in development of speech skills.

Types of Speech Activity	Information and communication technologies									
	Information education resources	Podcasts	Multimedia resources	Chats	Social networking	Viber	Project technology, web-quests	Case technology	Facilitation, professionally oriented business games	LMS Moodle
Speaking		+				+	+	+	+	
Writing				+	+	+	+	+	+	+
Listening	+	+	+			+	+	+	+	+
Reading	+		+	+	+	+	+	+	+	+

The following criteria were developed for the evaluation of writing:
1. The relevance of the tasks to the topic (the relevance of communication intention).
2. The completeness of the coverage of the topic or situation.
3. Lexical and grammar correctness.
4. Logic connection of utterances.
Reading and listening were evaluated according to the following criteria:
1. Understanding of the texts in general.
2. Understanding of the details.
3. Critical understanding of the information contained in the text.
Information communication resources allowed deepening of professional knowledge and building professional competence. Search engines, the Internet catalogues were used by students as sources of materials like video, audio and multimedia files for their presentations, projects and other educational tasks. Different types of electronic reference media provided the students with the up-to-date professional information and news (data, facts, diagrams, etc.).

5. The verification of the effectiveness of using ICT in education
The competence level control before and after the experiment has proved the increase of the level of professional and foreign language competences due to the implementation of the proposed teaching methods (tables 2, figures 1–4). The fulfilment of the tasks connected with problem solving using ICT (project technology, web-quests, case technology, facilitation, professionally oriented business games), different teaching methods (group work in pairs, in small groups, in teams, participation in simulation and business games) stimulated the level of speaking skills.

All students participating in the experiment got more than 90% grades for the tasks of the first part of the test on writing. Most of the students demonstrated twice as good results in the second part of the test – to write an e-mail.

The systematic work with podcasts and audio texts has allowed developing the mechanisms of listening, improving forecasting, widening the range of understanding different phonetic realizations.

Table 2. ICT use in development professional competence.

| Professional competence	Information education resources	Podcasts	Multimedia resources	Chats	Social networking	Viber	Project technology, web-quests	Case technology	Facilitation, professionally oriented business games	LMS Moodle
Ability to work in team				+	+	+	+	+	+	+
Ability to perform professional responsibilities according to adopted norms and regulations		+	+	+	+		+	+	+	+
Ability to evaluate different factors of external environment	+	+	+	+	+		+	+	+	+
Ability to mobilize management resources	+	+	+	+	+	+		+	+	+
Ability to systematize and distribute information in management system	+	+	+	+	+	+	+	+	+	+
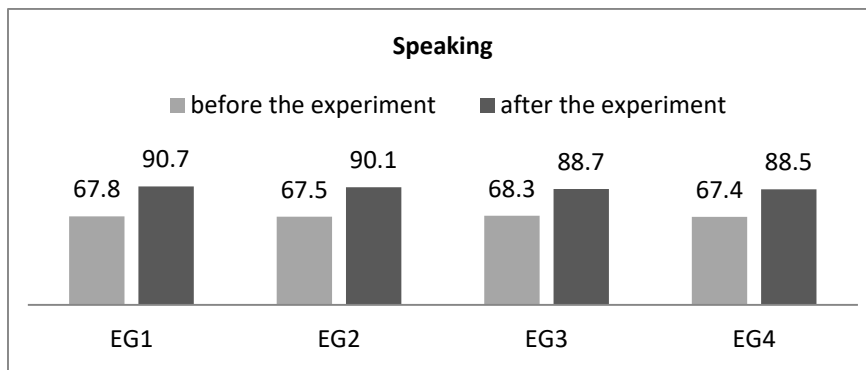
Figure 1. The results of the evaluation of speaking skills before and after the experiment.
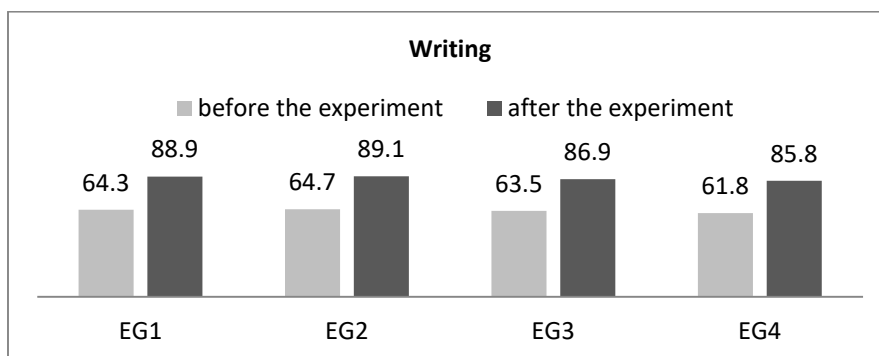

Figure 2. The results of the evaluation of writing skills before and after the experiment.
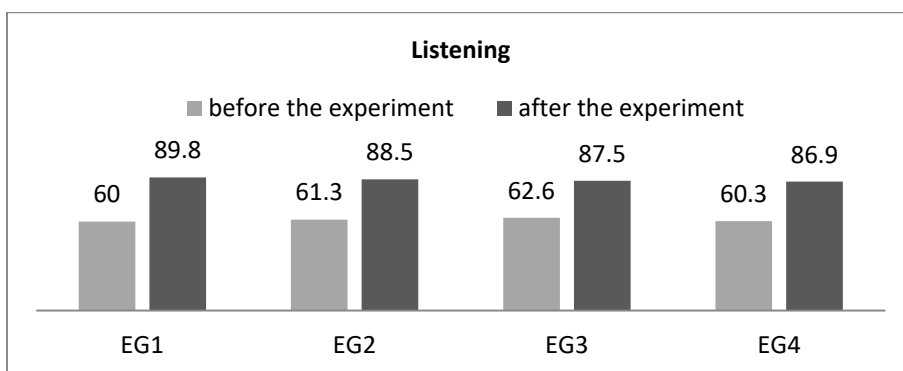
Figure 3. The results of the evaluation of listening skills before and after the experiment.
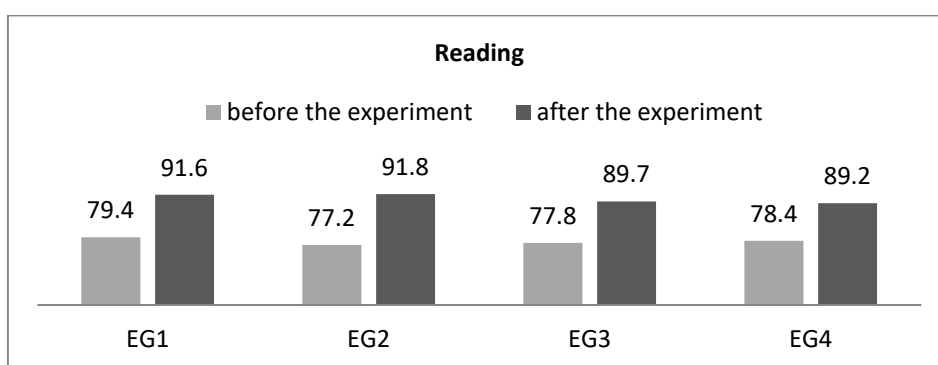

Figure 4. The results of the evaluation of reading skills before and after the experiment.

Student involvement into independent and out-of-class activities using information communication resources and the Internet technologies has allowed the intensification of the work on building reading competence, stimulated the development of learning skills and independence.

According to the results of the evaluation of skills before and after the experiment, obtained data showed the following result after verification of the statistical hypotheses using Student's t-test. 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. 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 are better compared to the results of groups EG3 and EG 4. The detailed statistical analysis of the obtained data was earlier presented by the authors (Yudina et al [28]).

Although the positive influence of ICT use in educational process has been proved experimentally and it is difficult to overestimate them, the negative sides are to be given careful consideration. The project of our integrated model presupposes the profound research of both advantages and drawbacks of ICT use in educational process with the help of the content analysis. The topic of negative influence of ICT has been covered in many researches (Al-Ansi et al, [1]; Alhumaid, [2]; Chusavitina et al, [5] and others), but it is mostly fragmentary and has not got a profound systematic analysis. The authors suggest that the analysis of the educators' opinion on this issue would be a good starting point for its deeper consideration.

The open-ended questions have been chosen as the instrument to investigate the professors' opinion as to positive influence of ICT use as well as the negative one and the methods of its minimization. The advantage of this instrument is the absence of the preliminary developed research scheme based on the researcher's bias. The answers to open-ended questions allow revealing the genuine interests and preferences of respondents. The two questions were asked in the cause of our experiment: What are the positive results of ICT use in education based on your teaching experience? What are negative results of ICT use in education based on your teaching experience? In the cause of our experiment we have analyzed 63 answers using the classification scheme mentioned above. This analysis allowed us to identify narrower categories and build more detailed classification scheme. Table 3 represents the results of the analysis of the answers provided by the professors engaged in our research. The units were gradually added to the related category in the cause of the analysis.

Table 3. The results of the analysis of the answers to open-ended questions.

Categories and units of the analysis	Evaluation of results	
	Positive	Negative
The factors that have only negative evaluations		
Literacy and numeracy issues		
Inability to write a complete sentence		52
Spelling problems		49
Inability to work with simple formulae		42
Work with information		
Inability to find correct information / selectivity in the work with information		37
Inability of critical thinking		34
Inability to create cognitive support		36
Inability to create presentation support		29
Digital divide		18
Student's distraction during classes		23
Low motivation of students due to lack of computer skills		13
Technical problems arising during classes		8
Teacher's incompetence in ICT		3
The factors that have only positive evaluations		
Feedback tools		
Knowledge of results	59	
Knowledge of correct results	56	
Elaborated feedback (additional information, explanations, etc)	54	
Immediate feedback	45	
Support of lectures		
Cognitive support	42	
Presentation support	46	
Combined support	36	
The factors that have both negative and positive evaluations		
Assessment tools		
Peer assessment	26	29
Teacher assessment	38	15
Feedback tools		
Delayed feedback	18	32
Communication in the educational process		
Communication with peers	29	31
Communication with the teacher	42	18

Although the results obtained in the analysis of these answers are not comprehensive, they provide the preliminary list of positive and negative effects that accompany the use of ICT methods in education.

6. Conclusions

The examination of scientific researches and personal pedagogical experience gained by future managers at high school allowed us to systematize the didactical and methodological grounds for building foreign language professionally-oriented communicative competence based on ICT which are the following:

– the availability of a wide range of authentic sources of professional information and a large selection of virtual educational facilities (dictionaries, encyclopedias, search engines, E-platforms in the distance learning system, multimedia-based courses, public services and foreign-language learning facilities);

– the interactive character of most virtual educational facilities, which intensifies the learning process, expands learning environment, facilitates the access to information sources;

– creation of natural environment in the framework of joint linguistic projects; increase of students' motivation and interest due to exchange of information, ideas and plans, use of authentic situations, connected with cooperation, search and delivery of professional information in foreign language;

– use of different forms of in-class and out-of-class training: individual, pair and group work aimed at searching the information on the Internet and analyzing it allows organizing the joint research, prompt information exchanging and building of communication competence;

– enabling favorable conditions for individual learning, obtaining information and its prompt renewal promote efficient organization of informational environment, development of learning autonomy, self-organization, self-control and creativity;

– interactivity, fast feedback and control over students' performance allow objective evaluation of students' progress, placement and fulfilment of on-line tests, prompt grading and following own progress in learning and developing professional communication skills;

– free and fast access to theoretical and reference resources, archiving, storing, exchange and spreading of professional information provide multiple repeating of learning material and self-control of educational activity.

The analysis proves that most educators engaged in the research consider both positive and negative results of using ICT. The main negative effects are referred to the sphere of basic competences. The use of gadgets in educational process requires completely new methodological approaches to teaching such basic skills as writing correctly (spelling), using proper style (avoiding the style of messages), counting. The second big methodological issue is to build the competence of critical processing of big volume of the information available from the Internet. Less important but still considered by many participants of the research is dealing with students' distraction during classes. Digital divide has been also mentioned by some professors, but it is not crucial and its overcoming is beyond the sphere of development of new teaching methods.

The big amount of answers included the factors that were considered as positive by some educators and negative by others. This fact shows that some teachers are able to successfully overcome the challengers brought forward by using ICT in educational process due to new teaching methods applied by them, whereas others fail trying to combine old methods with new technologies. This list is to become the basis of the classification scheme for the profound content analysis which is under development at this point and to be performed later in our research.

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