

INTEGRATION OF SCIENCE AND LANGUAGE IN TEACHING ENGLISH

Irina Germanovna Kondrateva¹, Mariya Vladimirovna Nazarova²

¹Associate Professor, ²University teacher, Kazan Federal University, Institute of language,
English language department for natural sciences, Kazan (RUSSIA)
E-mails: i-kondrateva@yandex.ru, fipfop@mail.ru

DOI: 10.7813/jll.2015/6-3/47

Received: 01 Jul, 2015
Accepted: 20 Aug, 2015

ABSTRACT

The paper introduces the process of using integrated technology in teaching English and potential of discipline "Foreign language" that allows to form students' foreign language communicative and professional competences while teaching English. The characteristics of integrated technology, different opinions on the problem applying this technology while teaching English and Biology are described in the paper. The results of the experiment show the level of motivation in students and the effectiveness of integrated technology in educational process. During experiment it is revealed that the integrated lessons promote improvement of all-educational and language competences and create conditions for expansion of cognitive activity of pupils. Use of a technique of CLIL training in English helps to overcome alienation of the graduate from externally set purposes, to find own social and professional format, to pull together knowledge and human wants. Studying of experience of application of a technique of CLIL in educational institutions of the country and abroad, and also creation and approbation of the integrated courses of studying English and other subjects, identification of positive and negative sides during the experiment, application of this technique is necessary for improvement of quality of education.

Key words: foreign language teaching, CLIL technology, communicative and professional competences, integrated technology

1. INTRODUCTION

Due to the growing number of EU countries, the quality control of teaching a foreign language is a top priority. Nowadays the actual aims of language education are to improve students' ability to socialize in cross-cultural space, improvement of their professional and foreign-language communicative competences, their personal and professional qualities.

A foreign language becomes an important and necessary element, both in systems of training and a guarantee of future successful scientific professional activity. A foreign language's potential has been changing, turning it into means of education and all-round development of personality. It becomes an access to foreign-language professional information, implementation of cross-cultural communication within the context of people's professional activities. There is a big demand for creation of such educational technologies that would conform to requirements of modern education.

2. METHODOLOGY

One of such technologies that can improve students' knowledge and form professional and communicative competences is integration of subjects. The integrative approach is known as a technique of subject and language integrated training (CLIL - Content and Language Integrated Learning), it can solve a problem of complete training of future specialists thanks to merging of disciplines; it allows students to see the surrounding world not as the sum of separate laws and theories, but as a uniform, harmonious world where mathematical and humanitarian knowledge do not oppose each other, and are mutually enriched and supplemented.

Since 1990 the European association has an accurate vision of multilingual Europe in which people successfully live, using not just one foreign language for communication and conducting professional activities. Many countries already successfully use CLIL in practice. Among such countries are Bulgaria (for 50 years), Hungary, Great Britain, France, Spain and Germany where an education is achieved through a foreign language. In schools this integrated approach is applied when studying such subjects as: history, mathematics, biology. To achieve the right results English, German, and French languages are used.

Besides, this technique is used in higher educational institutions, which allows not only preparing specialists who choose a foreign language as a career, but also prepares people who use foreign language skills in their respective professional fields.

The analysis of scientific and pedagogical literature, normative documents on this subject, showed that there is no clear definition of the concept "integration", there is a number of single-root terms: the integrated lesson, the integrated training, etc.

The Soviet scientists I.D. Zverev and V.N. Maximova give the definition of pedagogical integration in their scientific works - "Integration is process and result of creation indissolubly coherent, uniform, integral. In training it is carried out by a merge into one synthesized course (a subject, the section of the program) of elements of different subjects, merges of scientific concepts and methods of different disciplines in general scientific concepts and methods of knowledge, a complex and summation of fundamentals of sciences of disclosure of intersubject educational problems"[1].

From the point of view of O. A. Alekseenko, the concept "integration" in an education system can take two forms: the training purpose - creation of the integral idea of world around; tutorial - a chance to bring subject knowledge together [2]. I.D. Zverev understood the term "integration" as association of several subjects in a single whole, in which scientific concept is connected by the general sense and methods of teaching [3].

CLIL (Content and Language Integrated Learning) considers learning of foreign language as a tool for studying other subjects, thus, forming the need for study that allows a student to rethink and develop his abilities in communication,

including the native language. CLIL is a didactic technique which allows students to create linguistic and communicative competences in non-native language in the same educational context in which they have a formation and development of all-educational knowledge and abilities.

Scientists-methodologists and expert teachers address the subject of the integrated lesson and the integrated course on the pages of "Foreign Languages at School" magazine. Therefore, L.P. Zagornaya considers that "The integrated courses help to form a more complete picture of the world in which the foreign language carries out a specific role for the student – serves as a learning and communication tool..." [4].

New solution to help raise interest among students during the lesson is the idea of using integrated lessons. Besides, they are a strong incentive for students to develop their abilities to compare, analyze, draw conclusions, to generalize and rely on interrelation with other subjects, thereby promoting formation and other components of professional competence of specialists.

The most important aspect of training is formation of motivation; it is a cultivation of ideals and world outlook values in combination with active behavior of the student, which means unity of the word and business, active living position. Using of CLIL methodology keeps students motivated and interested in learning new information, material they are learning. Students can make greater connections between topics, and can recall information, furthermore, they can give their own opinion on the subject and everyone wants to help each other to understand the information better, so it leads to cooperation. Motivation and interest are crucial in supporting student success with challenging, informative activities that support success and which can also help the student learn complex skills [5].

In fact, when students are interested they achieve more in learning language.

This in turn leads to a perception of success, of gaining positive attributes that will continue a circular learning pattern of success and interest. Motivation aspect of integrative lessons is a key in learning foreign language. Motivation promotes development of intellectual activity of students and increases the efficiency of the learning process. Because CLIL technique is student centered, one of its goals is to keep students interested and motivated by generating stimulating content and materials.

3. RESULTS

The research was carried out to find out the effectiveness of using CLIL technique in educational process of teaching English. One of the research problems was to carry out an experimental inspection of using integration technology of non-adjacent disciplines, to reveal positive and negative sides of application of this technology, and to develop methodical recommendations about the use of this technology at schools and in universities.

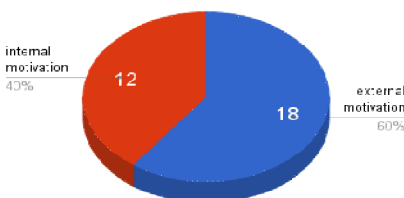
The first stage of experiment was passing in Municipal Budgetary Educational Institution "High Comprehensive School No. 171 with Profound Studying of Separate Subjects" in Kazan city in 2014. The aim of the first stage of the experiment was to find out positive and negative sides of integrating this technology of non-adjacent disciplines "Biology" and "English" in educational process that were revealed.

Experiment took place in 7th form and involved 30 pupils. To determine the level of motivation of students the technique of T.D. Dubovitskaya "Diagnostics of an orientation of educational motivation" was applied. [6]

Here is what has been established at the initial stage:

- External motivation at 18 people (60%)
- Internal motivation at 12 people (40%)

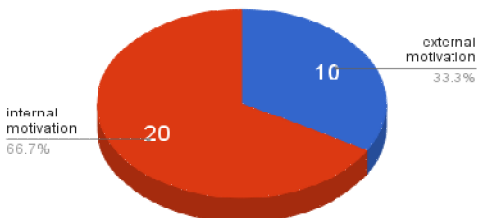
Dubovitskaya T.D. "Diagnostics of an orientation of educational motivation" the initial stage



At the following stage, after application of integration technology of non-adjacent disciplines, an increase of internal motivation was noted, mainly:

- External motivation for 10 people (33, 3%)
- Internal motivation for 20 people (66, 6%)

Dubovitskaya T.D. "Diagnostics of an orientation of educational motivation" the final stage



The experiment showed that internal motivation of 8 people (26, 3%) became higher, interest in "English" was increased and progress in studies was increased subsequently.

Pupils performed tasks the aim of which was to form various competences, logic and thinking with interest. The following tasks were used on the theme: "Speaking about animals (Lagomorphs and Rodents)":

- Compare European hare and Mountain hare, after that fill in the gaps

	European hare	Mountain hare (White hare)
1.Description	European hare is one of the largest living members of Lagomorpha. Its head and body length can range from 48 to 75 cm. As with all leporids, the hare has elongated ears. The fur colour is grizzled yellow-brown on the back; rufous on the shoulders, legs, neck and throat.	
2.Range and habitat		
3.Food	During the summer, they eat grasses, herbs and field crops. During the winter, they eat herbage, twigs, buds and the bark of shrubs and young fruit trees.[7]	

- Write a scientific classification of Ground squirrel according to this scheme.

Kingdom:

Phylum:

Class:

Order:

Family:

Genus:

Species:

- The game «Agree or disagree». If you agree, repeat my statement; if you disagree, explain why.

- 1.Squirrels belong to family Sciuridae of small or medium-size rodents.
2. Lagomorphs are generally large animals.
- 3.The coypu is also known as the river rat or nutria, a large, herbivorous, semi aquatic rodent.
- 4.Rodents typically have slender bodies with bushy tails and large eyes.
- 5.The color of Lagomorphs is highly variable between—and often even within—species.
- 6.Rodents and lagomorphs play an important role in ecosystems.
- 7.Wild rabbits live in the south of Western Europe.

Use of a project method during the integrated lessons of English and Biology had a success in developing in children interest in research activities, e.g. in topic "Food additives in our life". The project-method... suggests independent cognitive activity of students on the given topic or issue. What is important about this method is that the trainee focuses his/her attention not on the English language but the problem researched; so a substantial aspect is in the spotlight, but not linguistic [8].

Extracurricular activities included preparation and the printing of the class register "Interesting facts about animals", participation in the colloquial circle "Speak English" where the following subjects were discussed: "Wild animals", "Flowers", "Bacterial pathogens". Out-of-class independent work of students which promotes self-development of the personality is of great importance, teaches a reflection, a goal-setting, planning and the organization of activity for achievement of the purpose [9].

These results can be considered as positive while using this technology in educational processes in schools:

- increase of internal motivation of pupils;
- formation of all-educational and subject competences, logic and thinking;
- first steps of schoolchildren in research activity;
- increase in progress[10](see tab. 1).

Table 1. Statistical data for 2 months of learning English with using integrated technology

Quality		The average degree of proficiency of students		Achievement level	
January	February	January	February	January	February
73.33 %	86,67%	58.67%	77,07%	86,67%	93%

Motivation and personal interest are important in training. When the pupil is motivated he performs better, positive experience stays in the memory and can later be like a push to continue training, it also helps to remove the so-called "language barrier".

Negative sides of experiment should be also noted:

- need for highly qualified teaching staff with language and subject competence. One of the main problems for teachers of a foreign language is insufficient knowledge in a particular subject or area and on the other hand- imperfect foreign language skills of subject teachers.
- decrease of pupils' progress (because of extension of information and knowledge that leads to psychological overload, absence of desire to continue to study);
- problem of assessing knowledge of pupils (What knowledge should be assessed: language competence or subject knowledge?).

Despite all above-mentioned difficulties, introduction of integrated lessons represents multipurpose approach to teaching a foreign language that allows solving a more expanded circle of educational problems.

The next stage of the research is solving the problem of the system of evaluation and assessing students'knowledge.

4. CONCLUSION

The global demand for studying languages, especially English, provides huge potential for CLIL. For subject teachers, language is opportunity for formation of additional skills and gives great opportunities for career development. Integration of language and the content of training are perceived by the European commission as "an excellent way of

achievement progress in a foreign language". Thus, CLIL effectively increases number of students and trains them up with skills necessary for success in various professions.

Gratitude

The work is performed according to the Russian Government Program of Competitive Growth of Kazan Federal University.

REFERENCES

1. Maximova V.N. "Interdisciplinary connections in the educational process of modern schools: a Training manual on special course for students of the pedagogical institutions." - M. Education. – 1987 p. 159-160.
2. Kolyagin Y.M., Alekseenko O.A. "Integration of school education" //Primary school, 1990. - №9, pp.28-31.
3. Zverev D. "The relationship of academic subjects" M: Knowledge. - 1977, p.29.
4. Lyakhovitsky M.V. "Methods of teaching foreign languages".Moscow. High school,1981 p.53.
5. Grabe, W., & Stoller, F. L. Content based instruction: Research foundations. In M.A. Snow, & D.M. Brinton (Eds.), The content based classroom: Perspectives on integrating language and content (pp. 5–21). NY: Longman, 1997.
6. Dubovitskaya T.D. Diagnostics of the importance of a subject for development of the identity of the pupil //Vestn. Orenburg University. - 2004. - No. 2. P. 75-79.
7. Naughton, D. The Natural History of Canadian Mammals. University of Toronto Press. 2012, pp. 235–38. ISBN 1442644834.
8. Minnisa S. Safina Formation of Socio-Cultural Competence in Teaching a Foreign Language// Procedia - Social and Behavioral Sciences, Volume 136, 9 July 2014, Pages 80-83.
9. Galiullina E., Kondrateva I., Madyakina N. Level and criteria of Students' Foreign Language Communicative Competence //Mediterranean Journal of Social Sciences, MCSER Publishing, Rome- Italy, ISSN 2039-2117 (online), ISSN 2039-9340 (print). - Vol. 6, № 3, Supplement 1. – May, 2015. – P. 290-295.
10. Nazarova M.V. Foreign languages: linguistic and methodological aspects: Collection of proceedings. Tver: Tver State University, ISBN 2306-2282. - 2015, pp.63-68.