

Creating Professional Culture of IT Students by Means of the English Language

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Abstract—The goal of this article is to exploit the problem of creating professional culture of IT students as well as identifying means of forming this culture. The modern process of instruction is directed at socially moral, professional, multicultural development of the personality of a future professional. Professional culture may be created by the means of professionally-oriented English language course. The present investigation is devoted to the subject of teaching reading as one of the important means of creating analytical skills considered to be the integral constituent of IT students professional culture. Results of practical research prove that the English language course can form a foundation that would allow the instructors to set new practical and educational goals of teaching intended to help them choose the most effective ways of participating in IT students professional culture creating.

Keywords—IT students' professional culture, analytical skills, professionally-oriented reading strategies, means of creating professional culture, professional activity, professional knowledge.

I. INTRODUCTION

The modern process of instruction is directed at socially moral, professional, multicultural development of the personality of a future professional. The creation of professional culture is a global, multi-disciplinary educational goal that should be pursued in every subject area making it professionally-oriented. Practical analysis has revealed sufficient educational potential in humanitarian sciences for comprehensive personality development as well as significant possibilities to create professional student culture. The formation of professional culture is implemented in the English-language instruction content by using professionally-oriented course materials which are introduced by methods allowing the learning process to resemble and imitate future professional activity.

The goal of this article is to theoretically exploit the problem of creating professional culture of IT students as well as to identify practical means of forming this culture. It is indisputable that one of the components of student professional culture, which comprises a certain variety of worldviews, expertise, traits, feelings, value orientations and a set of specialized skills (e.g. analytical) of a future specialist in IT. The present investigation is devoted to the subject of teaching reading as one of the important means of creating analytical skills of IT students. It reveals the essence of teaching reading of professional literature and determines the teaching reading strategies for students majoring in IT.

II. BACKGROUND

The modern concept of teaching a foreign language to students of non-linguistic specialties, is aimed at ensuring that a foreign language is an integral component of a modern scientific specialist's professional culture. One of the important trends in the training of technical specialists, is the learning of a profession through language, whilst concurrently learning the language through the instruction of the profession. One cannot help but concur with researchers who argue that learning in this context approximates the level of language proficiency equal to native speakers in the relevant scientific field [15]. It should be emphasized that the goal of foreign language education for non-linguistic specialists is not only the assimilation linguistic fluency, but rather acquiring general cultural information, developing speech skills, and mastering specialized skills in course of professionally-oriented language new material in situations of communication [12]. Therefore, the educational process should be aimed at the development of a professional culture, its significant qualities, experience and skills of the future specialist.

Under conditions of global informatization of the society, a foreign language can act as a pedagogical tool for professional

culture creating, since it provides the specialist with timely access to professionally relevant information from a variety of sources, has the educational potential, fosters the formation of professional skills of future specialists, makes a significant contribution to improve the professional development of a specialist [3].

III. PROBLEM STATEMENT

The increasing flow of foreign language information through both the Internet resources and printed publications requires from future professionals including IT students, abilities to scan a large amount of scientific material in order to find, extract, process and use the information perceived to solve their professional tasks. In this regard, one of the main requirements for teaching the English language in higher education is to prepare a student for the mastery of reading as a way of obtaining and structuring professionally relevant information.

According to our survey results [13], 97% of students consider reading and understanding professional text and documentation as the most demanded type of speech activity in a foreign language. Majority of students recognize the importance of using professionally-oriented English literature in the preparation of course projects, diploma thesis, while working on the Internet and, ultimately in the pursuit of employment.

The analysis of the conditions of IT specialists professional activity, has shown that information acquiring is carried out by means of the language, since the transformation of information from one system to another is the processing of text [20]. This provision helps conclude that language is the foundation of the formation of professional competences based on the analytical skills as a constituent of their professional culture.

IV. DISCUSSION

The interdisciplinary nature of a foreign language makes it possible to form knowledge, experience, and skills in various educational fields. It is known that the study of a foreign language can improve mental operations by analyzing and comparing the lexical and grammatical phenomena of the native and studied languages, identifying the main content, cause and effect links, and informational structure of the texts received [6]. Studying the general cultural and professional competencies of IT students allows one to conclude that the basis of their professional work is analysis characterized by information processing using analytical skills. In our research, we define analytical skills as actions aimed at conscious implementing the basic analytical operations of synthesis, comparison, generalization, abstraction, classification, etc. [14].

A number of domestic and foreign scientists J.A. Aebersold, A.L. Buran, A.A. Veize, V.B. Grigorov, L.A. Kozhevnikova, T.S. Serova, S. Urquhart, C. Weir study problems related to the teaching reading of professionally-oriented literature [1, 5, 7, 9, 17, 19]. However, in-depth examining of the theoretical aspects of students instruction and our teaching experience have revealed that the issue related to teaching IT students to read in English in order to form analytical skills that are an integral part of their professional

culture requires additional study. We believe that teaching reading will help to develop certain specialized skills as a constituent of professional culture. The results of the research prove that in the European system of higher education, reading is the most important type of speech activity [10]. According to our research, 30% of the students participated in the pilot study have high level of reading skills, 20% do not have sufficient reading skills, 32% understand the general content of explicit information, 8% have reading skills below the A1 level in the Common European Framework of Reference for Languages.

In the process of reading, basic analytical operations: analysis, synthesis, comparison, classification, generalization, systematization, abstraction are developed [4]. Reading forms analytical skills due to active functioning and development of all interrelated cognitive processes. In total, there have been more than 30 types of reading recognized [8, 16, 18]. From the perspective of a comprehensive text understanding taking into account target setting, four main types of reading are traditionally distinguished: extensive, intensive, skimming, scanning. We define types of reading as a set of operations, determined by the purpose and characterized by “a specific combination of techniques for the semantic and perceptual processing of material perceived visually” [8]. We carried out the content analysis of the text processing using the strategies of various types of reading. It revealed that the above mentioned types of reading involve specific analytical operations (figure 1.)

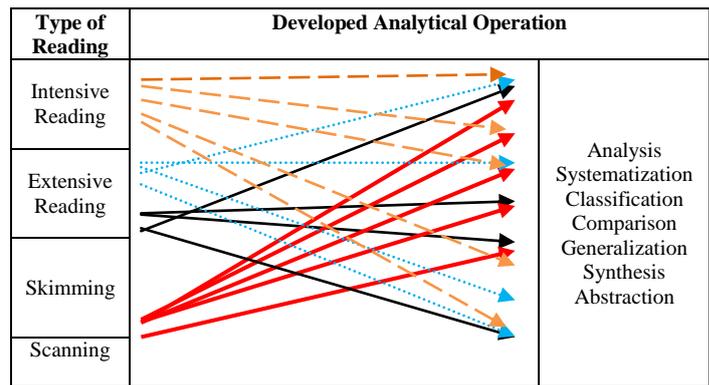


Fig. 1. Analytical operations in types of reading.

V. RESEARCH

A. Instrument

Thus, in the course of working on any of the types of reading, the formation of analytical operations occurs. Reading is a kind of speech aimed at extracting information from the text by means of its decoding. Analytical skills are a universal tool that facilitates information processing [14]. Therefore, we assume that reading is an important element of teaching technique and has a great educational and developing potential. Therefore we came to a conclusion that instruction in various types of reading can be used in foreign language classes to form analytical skills for future IT specialists.

To determine the level of the formation of analytical skills, we conducted a practical research. The students completed the tasks of the adapted version of R. Amthauer’s test, which determines the structure of their intellect. We selected subtests

that allowed us to judge the analytical and synthetic abilities of students (based on analysis, synthesis, abstraction, generalization).

According to the tests assignment, a rating evaluation of the level of analytical skills, represented by analytical operations, was determined. The maximum score is 76, which is 100% successful completion of the assignment and confirms the high level of the formation of the tested analytical operations. Analysis of individual data showed that only 20% of students completed the maximum number of assignments (70-60 points), 65% showed a result of 59-40 points, 9% fulfilled 49-20 tasks, and 6% of students showed the result below 20 completed test tasks. Thus, most students did not complete the tasks in full. It became clear that students have insufficient levels of analytical skills, based on synthesis, generalization, comparison, classification, etc.

A low level of development of analytical skills was revealed in solving certain problems when reading in a foreign language, including: the ability to analyze data, classify information, compare facts, select keywords, abstract insignificant information, argue their opinion and draw conclusions. Among 87 students, 16% successfully completed the task, while the rest showed a low level of proficiency in the skills tested. In this connection, there is a need to search for an effective means of instructing students the methods of analysis to form their analytical skills.

B. Data Analysis

The study of reading skills revealed that 30% of respondents possess reading skills in a foreign language at a high level, 21% do not have good reading skills, 32% understand the general content of explicit information, 8% have reading skills below the A1 level (Common European Framework of Reference for Languages). Measurement of the level of reading skills was conducted on the basis of Cambridge reading tests (entrance testing at the beginning of the course of teaching a foreign language).

We claim that the main objective of teaching reading of professionally-oriented texts to IT students is clearly beneficial. To support this assumption we composed a training manual "Tools for Teaching Reading of Professionally-Oriented Literature in English". This training manual is designed to teach ESP (English for special purposes) bachelor and master students majoring in technical specialties. Working with the material assumes that the students have an intermediate level of language training (Intermediate, Upper Intermediate Levels) [10]. The manual, aimed primarily at teaching students to read technical literature in the original, forms the ability to process extract, analyze, compare the necessary information and give a critical assessment to the perceived information, justifying their point of view. The material of the manual successfully contributed to the development of students' analytical skills, which was confirmed by the experimental work.

The experimental work was aimed at actively involving students in the process of foreign language instruction. In the course of the experiment, the work on teaching reading in a foreign language with the help of the above-mentioned manual has helped to significantly improve the skills necessary to read

professional texts. The study was performed with students of the 1st to 3rd year of the Faculty of Mechanics and Mathematics (Samara University), Faculty of Automation and Information Technology (Samara State Technical University) for 1.5 years (87 total students).

VI. RESULTS

Analysis of the experiment results has shown that teaching reading of professionally-oriented texts and tasks aimed at formation of analytical skills contribute to improving the quality of students' language training and increase the level of their professional culture. The final exam in a foreign language course has confirmed our theoretical assumption about effectiveness of application of the technology to teach students reading professional literature in a foreign language for the formation of analytical skills as a constituent of professional culture (Table 1).

TABLE I. RESULTS OF EXPERIMENTAL WORK BASED ON THE ASSESSMENT OF THE FINAL EXAM IN ENGLISH (% RATE)

Final Exam Evaluation	Control Group	Experimental Group
"Excellent"	43%	77.8%
"Good"	31.3%	13.2%
"Satisfactorily"	23.7%	9%
"Unsatisfactory"	2%	none

VII. CONCLUSION AND PRACTICAL IMPLICATION

Knowledge of the English language is an integral characteristic of a qualified IT specialist. The borders of international cooperation are expanding; the demand for employees who can use a foreign language in professional communication is growing [2]. The professional activity of an IT specialist requires special knowledge, namely the ability to use databases, create computer programs, carry out information retrieval, receive constantly updating information on their specialty from different sources, continuing their education and raising their professional level. A foreign language acts as a means of forming analytical skills, expands the professional knowledge of students, contributing to successful implementation in the profession, which is achieved by teaching various reading strategies of professionally-oriented literature in English [11]. Consequently, a foreign language occupies an important place in the process of creating a professional IT specialist culture. It was proved in the course of the research presented.

The conclusions made in this article support the hypothesis that at a university-level English course a foundation that would allow the instructors to set new practical and educational goals of teaching intended to help choose the most effective ways of development of analytical skills which are an integral constituent of the professional culture of students majoring IT can be created.

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