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TEACHING TECHNICAL WRITING AS PART OF ESP**O. V. Lubianova***Kyiv, National Technical University of Ukraine “Kyiv Polytechnic Institute”
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The paper suggests theoretical and practical perspectives and directions for future research of technical writing with reference to specific industry standards of higher education in Ukraine (educational qualification specification for Bachelor's program), requirements of ESP (English for specific purposes) and Common European Framework of Reference for Languages. The paper discusses skills, abilities and competences needed for technical writing in higher technical university. It reflects main stages, content, forms and methods of teaching technical writing. The main objective in this case is to increase the global competitiveness of graduates on the IT market, which should include the most optimal ways of training. The concept of “technical writing” is defined. The focus of the paper is on compositional and semantic structure of technical writing (methods of professional presentation of information); graphical level of information presentation; language peculiarities: lexical level, grammatical level. Profound knowledge of foreign language can help implement such aspects of the professional activity as the introduction of new technologies, trends in the development of science and technology, the successful performance of professional functions, exchange of experience and establishing business contacts with foreign partners. This makes the need for studying technical writing urgent not only because of the lack of appropriate training and reference materials, but also because of the importance of qualitative education and training of future IT specialists.

Key words: technical writing, ESP, IT specialists, scientific and technical style, compositional and semantic structure.

Introduction. Foreign language communicative competence is one of those that build up a full competence package that is essential for young professionals. Higher education institutions provide graduates with required skills and competences that enable to solve typical tasks of the certain production functions. [7] In view of the changes that are taking place in information technologies, we must consider the fact of updating professionally oriented course of English writing. The ESP curriculum states that the acceptable English language proficiency level to qualify for a Bachelor's degree is B2 (Independent user). To meet the requirements for a Bachelor's degree, a student should be able to write professional texts and documents in English on a variety of topics as well as business letters in the respective area [9, p.30]. Graduates have to master ESP writing competence involving required knowledge and skills for the organization, management, communication and the ability to organize and describe a lot of technical information during the production process. The Common European Frameworks define levels of proficiency which allow to measure students' progress at each stage of learning and on a life-long basis. The provision of objective criteria for describing language proficiency will facilitate the mutual recognition of qualifications in different learning contexts, and accordingly, will aid European mobility. [2, p.10] A rapid development of information technologies offers more and more opportunities to use the multimedia tools in foreign language acquisition, making the process more interactive and student-oriented. In this context, the importance of English technical writing competence moves to the forefront.

The issue of “technical writing” is researched and highlighted in the works of E. Warnke (2009), G. J. Alred, Ch .T. Brusaw, W. E. Oliu (2009), I. Orlova (2012), N. Fenton (2003), St. Schneider (2005) and others. However, in the problems of theoretical principles of the analysis of technical writing and practical implementation are not covered enough, thus determining the relevance of this paper.

The aim of the paper is to examine and analyze the training situation at the Faculty of Information Technology and Computer Engineering of the National Technical University of Ukraine “KPI” in order to identify needs in technical writing, which forms a part of ESP course in the field of Computer Engineering.

In the educational qualification specification (qualification level – Bachelor's degree) of the Faculty of Information Technology and Computer Engineering of the National Technical University of Ukraine “KPI” the production functions, typical activities tasks, skills and competences, which

graduates should have, are specified. For example, the production design function includes the following abilities: to execute development of a program's code; to fix syntactic and semantic code's errors (debug and test a program); to develop the user specification requirements; to analyze the program requirements; to develop the program specification requirements. General competence is the ability to apply knowledge of basic standards in the field of information technologies while designing and implementing of information systems and technologies. Instrumental competence is the ability to write and speak in English – the ability to acquire and develop documentation for systems, products and services of information technologies [7]. This makes the need for studying technical writing urgent not only because of the lack of appropriate training and reference materials, but also because of the importance of qualitative education and training of future IT professionals. This is also evidenced by the increasing scientific and technical contacts with English-speaking representatives – potential employers (Global logic, Epam, Luxoft, Ciklum, Samsung, Softserve etc.) One of the factors determining the peculiarities of international information and computer services market is close relationship with the IT market. In our experiment we used the questionnaire (in the survey participated 40 students in the fourth year of study from the Faculty of Information Technology and Computer Engineering NTUU “KPI”, the specialty of “Computer Engineering”; the method of interview; observation of the educational process; the analysis of students' writing competence with language proficiency B2. We have noted insufficient level of development of their skills and lack of knowledge needed to effectively write technical documentation. Their written statements are characterized by low degree of accuracy, incompleteness, incoherency, inappropriate use of stylistic devices due to insufficient level of skills needed to distinguish features of scientific and technical style. Students of the fourth year of study have sufficient technical knowledge, abilities, skills and English conceptual framework, but do not have knowledge needed for writing technical documentation, which in most cases is necessary for understanding of the future professional environment. [8]

Evaluation of technical writing. In evaluation of technical writing we should consider such elements as *range* (shows great flexibility reformulating ideas in differing linguistic forms), *accuracy* (maintains consistent grammatical control of complex language), *fluency*, *interaction*, *coherence* (coherent and cohesive discourse, appropriate use of a variety of organisational patterns and a wide range of connectors and other cohesive devices) [2, p.37]. According to the requirements needed for formation of appropriate skills in technical writing, standards of ESP [9] and Common European Framework of Reference for Languages [2], students with objective level B2 (Bachelor's language proficiency) should:

- organize paragraphs in technical documentation, make headings and subheadings;
- interpret, compare and contrast tables, charts and diagrams;
- make outline and order ideas logically;
- use logical connectors for linking paragraphs;
- proof-read and revise of technical documentation;
- use grammatical structures needed to express appropriate functions and terms flexibly and produce technical texts in the professional area;
- use language forms appropriate to professional registers;
- have good range of relevant vocabulary (terminology and abbreviations) needed in the professional area.

The problem of English writing teaching in higher technical educational institutions has acquired special significance as there is a social order for professionals who have deep knowledge in English writing skills in various areas of professional activities at the domestic and international levels.

The definition of technical writing. Stephen Schneider [5] defines *technical communication* as a discipline and a set of practices, always concerned itself to some degree with what it means to communicate within an evolving technical and professional context. I. Orlova [4] distinguishes *technical writing* as a specific type of writing, which is above all subject to strict formats and mechanics and the use of field-specific terminology. The purpose of technical writing is to convey scientific and technical information in a clear, non-ambiguous way. The linguistic

variety is of minor importance, while clarity and brevity of the message are. However, this is true for certain types of technical writing settings, such as technical descriptions, instructions and manuals, graphical information descriptions, etc. The study of G. J. Alred, Ch. T. Brusaw, W. E. Oliu [1] reveals that the best way to ensure that writing will succeed is to take into account the following steps:

1) Preparation: a) to establish primary purpose; b) to identify audience (or readers) and the context; c) to determine the scope of your coverage; d) to select the appropriate medium.

2) Research: a) methods of research; b) sources of information.

3) Organization: a) methods of development: as a student analyzes the information he/she has gathered, it is necessary to choose the method that best suits the subject, the readers' needs, and the purpose); b) outlining, which breaks large or complex subjects into manageable parts. It includes layout and design, visuals (e.g. tables, graphs), headings, lists.

4) Writing (introduction, main part, conclusion; effective sentence construction, structure of paragraphs, appropriate style and tone);

5) Revision (unity and coherence, spelling, punctuation, proof-reading).

Compositional and semantic structure of technical writing. Norman Fenton [3] also stresses that the first section of any technical document should be an introduction and overview of the entire document. It should end by giving a walkthrough of the subsequent sections. E. Warnke [6] suggests the following compositional and semantic structure of technical documents, which identifies the following composite blocks:

1. Table of Contents (structured descriptions of all phases of the technical product);

2. Overview (provides a high-level description of the product);

3. Additional Resources (additional links to existing versions of technical products);

4. Getting Started (includes information to guide the user regarding the needs to be set up and configured before the product can be used);

5. Tutorials (organized by core tasks or features of the product);

6. Reference (provides descriptions of every function, feature, and control of the product);

7. Appendices (include frequently asked questions (FAQ), troubleshooting tips, contain additional or supplementary information advice to resolve various issues);

8. Index (increases the usability of the document by facilitating the process of finding information) [6, p.52-78].

Conclusions. Prospects for further research of this topic can be theoretical research and practical development of regular instruction on formats and principles of technical writing with reference to specific industry standards of higher education in Ukraine (educational qualification specifications), wider introduction of information technologies in the educational process that are able to raise to a new level of training competitive professionals, as the period of study at the university is the basis for getting foundations of professionalism and independent professional skills are formed. The paper reflects skills, abilities and competences needed for technical writing in higher technical university. It allows to clearly understand the content, forms and methods of teaching of technical writing. The main objective in this case should be to increase the global competitiveness of graduates on the IT market, which should include the most optimal ways of training. Profound knowledge of foreign language can help implement such aspects of the professional activity as the introduction of new technologies and the successful performance of professional functions.

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О. В. Лубянова. Навчання написання технічної документації майбутніх фахівців з інформаційних технологій.

У статті запропоновано теоретичні та практичні перспективи та напрями майбутніх досліджень у технічній документації з посиланням на галузеві стандарти вищої освіти в Україні (освітня кваліфікаційна характеристика для освітньо-кваліфікаційного рівня «бакалавр»), вимоги типової програми АМПС (англійська мова професійного спрямування) і Загальноєвропейські рекомендації з мовної освіти. Наведені навички, уміння та компетентності, необхідні для оволодіння технічною документацією у вищих навчальних технічних закладах. Відображено основні етапи, зміст, форми і методи викладання професійно орієнтованого писемного мовлення. Основна мета – це підвищення конкурентоспроможності випускників на ринку ІТ, що повинно включати найбільш оптимальні шляхи навчання. Наведено поняття «технічна документація». Представлено композиційно-сміслову структуру технічної документації (методи професійного подання інформації); графічний рівень представлення інформації; лексико-граматичні особливості.

Ключові слова: технічна документація, АМПС, ІТ фахівці, науково-технічний стиль, композиційно-сміслова структура.

О. В. Лубянова. Обучение написания технической документации будущих специалистов по информационным технологиям.

В статье предложены теоретические и практические перспективы и направления будущих исследований в технической документации, при этом учитываются отраслевые стандарты высшего образования в Украине (образовательная квалификационная характеристика для образовательно-квалификационного уровня «бакалавр»), требования программы «Английский язык профессионального направления» и Общеєвропейские компетенции владения иностранным языком. Приведены основные навыки, умения и компетенции, необходимые для овладения технической документацией в высших учебных технических заведениях. Отражены основные этапы, содержание, формы и методы преподавания профессионально-ориентированной письменной речи. Основная цель – это повышение конкурентоспособности выпускников на рынке ІТ, которые должны включать наиболее оптимальные пути обучения. Приведено понятие «техническая документация». Представлены композиционно-смысловая структура технической документации (методы профессионального представления информации); графический уровень представления информации; лексико-грамматические особенности.

Ключевые слова: техническая документация, английский язык профессионального направления, ІТ специалисты, научно-технический стиль, композиционно-смысловая структура.