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РЕЗУЛЬТАТЫ ИНФОРМАТИЗАЦИИ ПРОЦЕССА ОБУЧЕНИЯ ИНОСТРАННЫМ ЯЗЫКАМ БУДУЩИХ СПЕЦИАЛИСТОВ ТЕХНИЧЕСКОГО ПРОФИЛЯ

В статье рассматривается вопрос информатизации процесса подготовки будущих специалистов технического профиля. Анализируются научные работы по исследованиям эффективности применения электронных и мультимедийных средств обучения. Цель статьи – проиллюстрировать практику информатизации процесса подготовки будущих специалистов технического профиля. Рассматриваются различные средства информатизации учебного процесса. Приведены типы компьютерных программ (КП), которые используются в процессе подготовки специалистов технического профиля. Представлены некоторые примеры внедрения программного продукта «Английский язык: краткий курс физики» в учебный процесс. Сделан вывод о том, что программный продукт позволяет усилить мотивацию и повысить интерес студентов к изучению дисциплины «Иностранный язык».

Ключевые слова: информатизация, процесс, обучение, специалисты технического профиля, навыки говорения и аудирования, мотивация.

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RESULTS OF TEACHING FOREIGN LANGUAGES PROCESS INFORMATIZATION TO FUTURE TECHNICAL PROFILE SPECIALISTS
The article deals with the issue of informatization of the process of training future technical specialists. Scientific works on the effectiveness of the use of electronic and multimedia learning tools are analyzed. The purpose of the article is to illustrate the practice of informatization of the process of training future technical specialists. Various means of informatization of the educational process are considered. The types of computer programs (KP) that are used in the process of training technical specialists are given. Some examples of the implementation of the software product «English: a short course of physics» in the educational process are presented. The conclusion is made that the software product allows to strengthen motivation and increase the interest of students in studying the discipline «Foreign language».

Key words: informatization, process, training, technical profile specialists, speaking and listening skills, motivation.

Введение / Introduction. Currently, the world conditions are described as a requirement of an open information society. In the context of modern technical education development the global trend is a widespread of electronic and multimedia learning means. Recently, the technical profile specialists' training has been a priority area of higher professional education [22]. "In the era of Big Data, English teaching services incorporation and growth face the challenge of the vast volume, diversity, and unseen meaning of the data resources" [25].

Analysis of recent publications and research. Such scientists as N. V. Apatova, Yu. S. Branovsky, Ya. A. Vagramenko, S. M. Vishnyakova, B. S. Gershunskaya, A. P. Ershov and others dealt with the issues of education informatization. The issues of professional education informatization were studied by F. Betts [1], V. Bhaskar, Prof. Lajwanti [2], Launor F. Carter [6], I. Golitsyna [3], J. Lee, C. J. Bonk [19], J. Lim, J. C. Richardson [20], R. M. Suvarchala [11].

Z. Wu, Yu. Dong, X. Qiu, J. Jin state that «in the next generation of communication systems, data traffic is expected to increase dramatically and continuously» [25]. «An enormous amount of sensing devices (scalar or multimedia) collect and generate information (in the form of events) over the Internet of Things (IoT)» [14]. A. Alobaid proved experimentally that captions of videos played a positive role that impacted the improvement of learners' English writing accuracy over five months [13]. Xiao-Pang, G.N. Vivekananda, Khapre S. demonstrated that multimedia production necessitates the application of electronic equipment. They proposed multimedia-based English teaching model (METM) in order to reduce student English learning difficulties which proved that «the multimedia network teaching paradigm is accurate and feasible» [26]. The «method METM uses cloud networking to address multimedia-based learning resources' security challenges and hardware capabilities in colleges and universities» [26]. J. Fu studies the teaching mode of physical education based on Advanced Multimedia Technology (AMT) [17]. D. Grando says that the choice of multimedia needs to be thoughtful [18]. Electronic Learning Tools application was studied by O. Y. Wong, C. Gillan, N. Harnett, W. Li [24], H. Y. Ayyoub, A. A. AlAhmad, A. Al-Serhan, M. F. Al-Abdallat, E. Al-Muheisen, H. Boshmaf, Y. A. Abu-Taleb, Y. O. Alqudah, Y. Alshamaileh [15], M. Durnali [16], J. Niskanen, A. Vladyka, J. A. Kettunen, C. J. Sahle [23].

The purpose of given article is to present the practice of informatization of the training process of future specialists of technical profile.

Материалы и методы / Materials and methods. The purpose of the study is to provide the results of informatization of teaching foreign languages process. The following study objectives are: to analyze the scientific literature on the research topic; to identify possible ways of motivation increasing to learn a foreign language by future specialists of technical profile; to describe the experiment conducted to test the software product «English Language: a Short Course in Physics» in the context of «Foreign Language» learning and identify its effectiveness in teaching professional English. The methodological basis of the study was a systematic approach and the principle of consistency to the educational space of higher education, survey methods, interview, and observation method. An empirical study was conducted on the informatization of the process of teaching foreign languages to future technical specialists. The step-by-step experimental work consisted of ascertaining, forming and final experiments. The study involved 17 teachers, 73 students, 3 specialists of the methodological department of the Black Sea Higher Naval School (BSHNS). The survey methods were used (it was conducted among teachers and students), a survey (teachers, students and specialists of the methodological department of PMVMU participated there), a conversation with specialists of the methodological department, with teachers and students about the feasibility of using digital technologies and its positive impact on the development of the university, a systematic approach (considering the educational environment as a system), a method of observation.

Результаты и обсуждение / Results and discussion. Educational organizations of higher education are faced with the task of switching to computer-based learning technology [7, 8]. To solve this problem, teachers must have the skills to work with information technologies (IT) and their possibilities [4, 7]. Moreover, educators should understand the technical means of teaching (TMT) and software, as well as they have to be able to apply IT in practice [3, 6]. Picture 1 shows the computer programs (CP) used in the process of English learning.

When training future technical specialists, it is recommended to use educational presentations, video materials, electronic educational and methodological tools (software products), since these tools allow to present the educational material visually. This technique provides a motivation effect for learning, development of independent work skills and communication abilities [9].

Due to education informatization, it is possible to increase the level of specialists training [2, 21], since multimedia contributes to the perception and memorization of material.
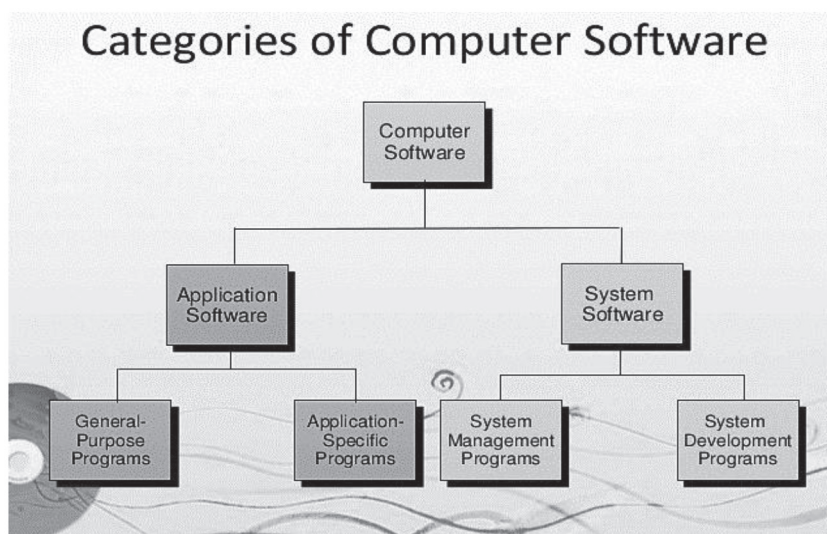
Pict. 1. Types of computer programs (CP) used in the process of training specialists

In this context, excellent learning tools are software products that increase the effectiveness of the learning process [11]. A software product is considered to be a set of interrelated programs for solving a specific issue (task), prepared for sale as any kind of industrial product [10].

Software products are developed in accordance with the educational program requirements of the Federal State Educational Standard of Higher Education [12].

One should consider the practice of creating software products in «Foreign language» subject, which mainly contain practical parts. The basic concepts of the subjects are embedded in them. Software products comprise self-control questions which are designed to facilitate the educational material assimilation [10].

We conducted an experiment to test the software product «English Language: a Short Course in Physics» in «Foreign Language» subject and identify its effectiveness in teaching professional English [5]. A diagnostic study was carried out on the basis of the Black Sea Higher Naval Order of the Black Sea Higher Naval School named after P.S. Nakhimov in 2021. The sample was presented by the 1st year students of specialties «11.05.01 Radio electronic systems and complexes» (716 class – 16 people) and «10.05.02 Information security of telecommunication systems» (718 class – 26 people). The experiment took place from January to June 2021 (2 semester of study). A control class was 726, and an experimental one was 716. Thus the software product «English Language: a Short Course in Physics» was introduced in class 716 when teaching English.

In order to determine the initial level of students' knowledge and the possibility of their use as subjects, a test was carried out. The students were asked to perform a comprehensive control work presented in picture 2.

Table 1 shows data on the level of proficiency of technical students with professional communication skills in a foreign language based on the results of complex work.

It was revealed that in both groups there is a low level of proficiency of students with professional communication skills in a foreign language.

The levels of students' proficiency in professional communication in a foreign language (English), presented in table 2, were conditionally determined.

In addition to studying the initial level of foreign language training of 1st year students, a questionnaire was conducted for students of 1–3 courses of technical training (156 people) at this stage of the experiment.

Максимально возможный первичный балл по входному контролю составляет 100 баллов (табл. 8.1).

Для решения заданий Входного контроля отводится 90 минут.

Таблица 1

Распределение баллов по уровням

Уровень	Количество баллов по результатам тестирования
Элементарный	0 – 74
Промежуточный	75 – 89
Средний	90 – 100

Входной контроль

I. Vocabulary and Grammar
Ex. 1. Choose one of the four variants. Only one variant is correct.
1. He …like me
no / doesn't / not / don't
2. …she go to work every day?
Do / Does / Is / Are
3. …two sisters.
There is / He is / He got / He's got
4. …you like living in Manchester?
Are / - / Do / Does
5. I… in Rome last year.
go / were / was / am
6. – What are you …now?
do / doing / did / does
7. There isn't …cheese in the fridge.
some / a / the / any

Pict. 2. Complex control work on «Foreign language» subject to determine
the initial level of students' knowledge

Table 1

**The levels of students' proficiency with professional communication skills in a foreign language (English)
in experimental and control groups based on the results of complex work (in %)**

Levels	Experimental Group	Control Group
High	18,7	19,8
Medium	18,9	25,1
Law	62,4	55,1

Table 2

The levels of technical students' proficiency in professional communication in a foreign language (English)

Low Level	Medium Level	High level
The volume of vocabulary (professional units) is insufficient to give an elementary answer to a question in the specialty.	The volume of vocabulary (professional units) is almost sufficient for a complete and meaningful answer to the question on the specialty.	The volume of vocabulary (professional units) is sufficient to give a complete meaningful answer to the question on the specialty.
The answer comprises a significant number of gross errors: word order in a sentence, an incorrect verb form that may interfere with direct understanding, or mistakes that impede understanding answer.	The answer contains some gross errors (such as, incorrect word order in a sentence, incorrect verb form) or few errors that do not interfere with direct sense understanding.	The answer does not comprise gross errors, but consists of single minor errors: incorrect use of prepositions, articles, the number of nouns, etc.)
The speech is uncertain, there is no smoothness. The pronunciation is unclear or indistinct. The speech is smooth, but to a small extent uncertain.	Pronunciation can cause some difficulties for direct understanding. The speech contains isolated manifestations of uncertainty.	Pronunciation does not interfere with understanding the content of the text

The purpose of such a survey is to identify the level of students' knowledge, their attitude to language training in an educational institution of higher education, as well as their motives and interests. The results of the survey are presented in picture 3.
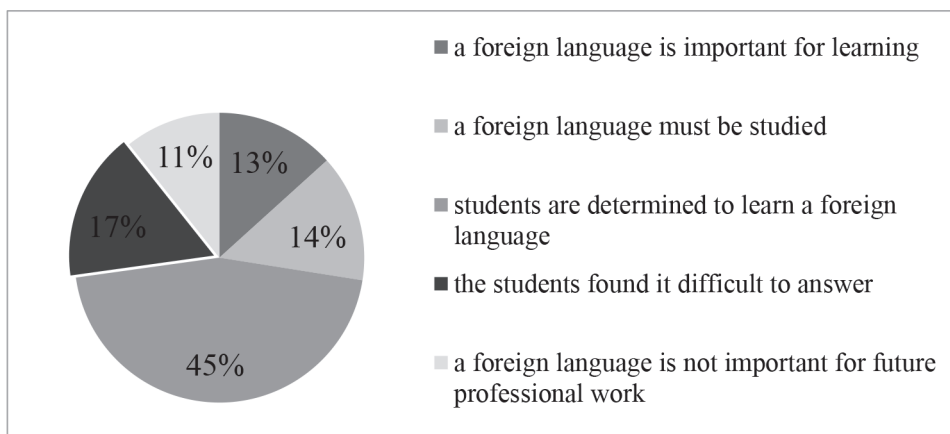
Pict. 3. Questionnaire diagram of the first stage of the experiment

Some examples of the software product «English Language: a Short Course in Physics» introduction into the learning process should be presented.

Types of exercises with the software product «English Language: a Short Course in Physics».

1) «Working with drawings of educational visual AIDS».

Teacher (T.): Look at the picture in the page 23. What is in it?

Educators (E.): In the picture we can see capacitors.

2) «In the laboratory».

T.: Imagine you came to your colleague's electricity laboratory. Ask him/her to show you the experiment he/she is busy with now. You are interested in the capacitors operation. A scientist is working in the laboratory, and you would like to ask him/her questions about the basics of capacitors.

E.: Good day, Mr. White. Can you tell us the basics of capacitor operation? How long have you been working with the capacitors?

T.: Now speak to the group mate about the capacitors using the information in a visual tutorial.

E.: A capacitor is two conductors called plates, located close to each other. In other words, it is a device for accumulating the charge. Electric intensity is a physical quantity that is numerically equal to the charge that the conductor needs to indicate to in order to change its potential by one. The capacitance (C) of the capacitor is equal to the electric charge (Q) divided by the voltage . The unit of measurement of capacitance in the SI is the Farad. 1F = 1Kl / 1V Earth's capacity is 700 microfarads. Capacitors can be flat, cylindrical and spherical. The capacity of a flat capacitor depends on the area of the plates, the distance between them and the material (dielectric) that fills the space between the plates.

3) «In the laboratory».

T.: Imagine you came to the laboratory of an electric field. Ask the questions about the electric field.

E.: Good day, Mr. Black. Can you tell us the basics of an electric field? How long have you been working with the electric field?

E.: An electric field is…

4) «The conversation near the stand».
   T.: So, imagine you are near the stand with your colleague. Speak about the stand information in it.
   E.: Hello!
   E.: Hello, my dear friend. Can you tell me what information is in this stand?
   E.: In the stand there is a usual capacitor. It is used for…

5) «The conversation of the senior students with the students of the junior courses».
   T.: Hello, guys. Now a student of M. 3 courses will tell you about the principles of operation of the transformer.

6) «The conversation in the simulator center (near the simulator)».
   T.: So, imagine you are in the simulator center (near the simulator). Speak to the specialist about it.
   E.: Hello!
   E.: Hello, my friend. Can you tell about this simulator and how it works.
       In addition, not only speaking and listening skills, but also grammatical skills were mastered by means of an educational visual aid, together with the students of the experimental groups. The grammatical topic «English Questions. Question Types» is presented in the picture 4.
   The following task may be:
   T.: Make the special questions to the given sentence. Make as many questions as you can on all the types of the questions.
   E.: Who mentioned the word «electricity» firstly?

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Pict. 4. Fragment of lesson 8 «Electric circuit» of the visual textbook «English: a short course in physics. Electricity»

During the lesson, the grammatical topic «The order of words in an English affirmative sentence» was worked out.

T.: Look at the sentence and make a scheme of it. Name the subject, predicate.

E.: In this sentence the predicate is…

With the help of the author's educational visual aid, the formation of writing skills took place. After studying the topic, students were asked to complete an independent task during extracurricular time: «Write briefly (no more than 1 page) about what you learned today using the information in the manual». T.: Today we've learned the topic «Current». So, write everything you have remembered.

After the introduction of the software product «English Language: a Short Course in Physics» into the learning process, a control section was conducted in order to determine the results of the implementation of the author's model and teaching methodology.

The control section of the experimental study showed that the motivation and students' interest in studying the discipline «Foreign language» increased from the point of view of their professionalism; the level of professional knowledge of students that they acquired during classes in «Foreign Language» subject in the field of radio engineering, radio materials and physics increased [table 3, pict. 5].

Table 3

The levels of proficiency of technical students with professional communication skills in a foreign language in the experimental and control groups after the experiment (in %)

Levels	Experimental Group	Control Group
High	57,2	8,7
Medium	32,1	34,2
Low	10,7	57,1
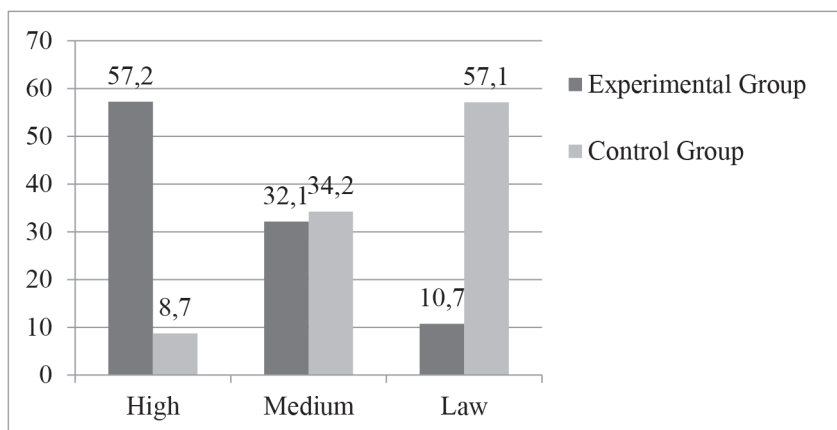
Pict. 5. Results of the control experiment.

Заключение / Conclusion. The development of information and communication technologies leads to a transformation of the information environment of our society, opening up new opportunities for professional education. Training on the IT basis is carried out as a process of educational and informational interaction while providing a motivation effect for learning, development of independent work skills and communication abilities. Some examples of the software product «English Language: a Short Course in Physics» introduction into the learning process were presented.

After the experiment, we can conclude that software products are effective tools for training future technical specialists. In general, we can say that training process informatization in the condition of English learning by future technical profile specialists has a beneficial effect on the formation of high professionals. The prospects for further research are issues of the role and impact of Information and Communications Technology in the study of other subjects as well as using its opportunities for communicative skill development.

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