ДИАЛОГ ПОКОЛЕНИЙ: ИЗУЧАЕМ. ОБУЧАЕМ. УЧИМСЯ

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The collection includes the proceedings of the IV All-Russian Research and Practice Conference with International Participation “Dialogue of Generations: Learn. Teach. Study”, published in three foreign languages: English, German and French. Relevant issues of philology, pedagogy, economics, history, technical and natural sciences and are discussed in 23 articles by 36 lecturers, post graduate students, master’s students and students of different universities of Russia, Republic of Belarus and Republic of Kazakhstan.

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В 2-х частях сборника собрано сорок научных статей на английском, немецком и французском языках, авторами которых являются преподаватели высших учебных заведений России: Санкт-Петербурга, Нижнего Новгорода, Костромы, Новосибирска, Москвы, а также из Республики Беларусь и Республики Казахстан.

В настоящем сборнике традиционно выпускаются публикации на трех иностранных языках: английском, немецком и французском. И если научные статьи, написанные на английском языке, можно встретить достаточно часто, то публикации, изданные в России на немецком и французском языках, встречаются достаточно редко. Тем ценнее является возможность выступления с докладами и публикации статей на этих языках, предоставляемая в рамках конференции «Диалог поколений: Изучаем. Обучаем. Учимся».

В этом году конференция «Диалог поколений» расширила свое название – «Изучаем. Обучаем. Учимся». И это не случайно: участники конференции не только обменивались мнениями и результатами своих научных исследований с коллегами («Изучаем»), но также выступали перед студентами («Обучаем») и использовали материалы своих докладов и статей на практических занятиях по иностранному языку со студентами Высшей школы технологии и энергетики («Учимся»).

Еще одним нововведением конференции стало привлечение к соавторству студентов выпускного курса Санкт-Петербургского государственного гидрометеорологического университета, а также аспирантов и магистрантов Высшей школы технологии и энергетики. Это новое направление в работе конференции, и мы надеемся, оно станет традиционным, поскольку полностью отражает цели и задачи, которые мы ставили перед собой, организовывая конференцию: изучать, обучать, учиться.

Содержание публикаций раскрывает сферу профессиональных интересов авторов. Сборник разделен на тематические секции: «Экономические науки», «Технические науки», «Естественные науки», «Филологические науки», «Исторические науки», «Педагогические науки» и «Психологические науки». Отмечается серьезный подход авторов к темам: многие из них изложили на одном из иностранных языков результаты своей научной работы. Интересен и тот факт, что некоторые преподаватели выступали с докладами и написали научные статьи на двух иностранных языках: английском и немецком. Особенно стоит отметить тех авторов, для которых преподавание иностранных языков не является основной сферой деятельности: они представили важные аспекты психологии, энергетики, автоматизированных систем управления, экологии, логистики и экономики на профессиональном языковом уровне.

В этом году в материалах конференции впервые появилась секция «Исторические науки». И хотя количество статей в данной секции еще не велико, что неудивительно для первого года, темы, затронутые в них,

чрезвычайно интересны и актуальны. Хочется надеяться, что в дальнейшем материалы секции «Исторические науки» будут представлены более весомо.

Количество статей в разных разделах распределено неравномерно, хотя по сравнению с предыдущими выпусками, явно видна тенденция к их выравниванию. Тем не менее, факт издания подобного сборника научных статей – важный аспект современной ситуации, когда владение иностранным языком является неотъемлемой характеристикой любого высококлассного специалиста.

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The present proceedings contain 40 scientific articles in English, German and French in 2 parts, authored by lecturers from higher education institutions of Russia (Saint Petersburg, Nizhny Novgorod, Kostroma, Novosibirsk, Moscow), as well as the Republic of Belarus and Kazakhstan.

An important distinguishing feature of the proceedings is the language of the publications, the articles being published in English, German and French. While scientific articles in English are widespread, the same cannot be said of publications in German and French, as they are quite rare in Russia. The more valuable is the opportunity to make presentations and publish articles in these languages, provided within the framework of the “Dialogue of Generations: Learn. Teach. Study.” conference.

This year the Conference is called “Learn. Teach. Study”, this being no coincidence. The participants not only exchanged opinions and shared the research results with their colleagues (“Studying”), but also spoke to students (“Teaching”) and used the materials of their reports and articles in foreign language classes with the students of the Higher School of Technology and Energy (“Learning”).

Another innovation of the Conference was the involvement of final year students of the Department of Philology of Russian State Hydrometeorological University as well as master’s and post-graduate students of the Higher School of Technology and Energy. This is a new direction in the work of the Conference, and we hope it will become traditional, as it fully reflects the goals and objectives we set for ourselves when organising it: to study, to teach, to learn.

The content of the publications reveals the scope of the authors’ professional interests. The proceedings are divided into thematic sections: “Economic sciences”, “Engineering sciences”, “Natural Sciences” “Philological Sciences”, “Historical Sciences”, “Pedagogical Sciences” and “Psychological Sciences”. The seriousness of the authors’ approach to the topics should be noted: many of them presented the results of their scientific work in a foreign language.

Quite interesting is the fact that some of the lecturers made presentations and wrote scientific articles in two foreign languages: English and German.

Particularly noteworthy are the authors for whom teaching foreign languages is not the main field of activity: they presented relevant aspects of psychology, power

engineering, automated control systems, ecology, logistics and economics at a professional linguistic level.

This year, for the first time, the “Historical Sciences” section appeared in the Conference proceedings. Even though the number of articles in this section is not yet high, which is not surprising for the first year, the topics touched upon are extremely interesting and relevant. It is hoped that the “Historical Sciences” section will have a stronger presence in the future.

One could mention the uneven distribution of articles in different sections, although compared to previous years there is a clear tendency towards levelling out. Nevertheless, the fact of publishing such a collection of scientific articles is an important aspect of the current situation, where foreign language proficiency is an indispensable characteristic of any highly qualified specialist.

I. ENGLISH
PHILOLOGICAL SCIENCES

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STUDYING CONTEMPORARY LANGUAGE DURING THE FIRST AND THE SECOND FOREIGN LANGUAGE COURSES (ENGLISH AND FRENCH)

Abstract. The study of the Internet communication provides the opportunity to look at the current state of the language. The late is given insufficient attention in the framework of teaching translation courses of the first and the second foreign languages. An outlook at the Internet communication makes it possible to observe changes affecting all the language layers necessary for future translators to master. Practical assignments for classroom and independent work within the framework of this topic also make it possible to have an individual approach to the translation study in various language pairs. To implement the theme, a task was developed with the features of group and individual project. The article contains examples of students' tasks in English and French.

Keywords: internet-communication, English, French, translation, sociolinguistics, teaching.

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ИЗУЧЕНИЕ СОВРЕМЕННОГО ЯЗЫКА НА ЗАНЯТИЯХ ПО ПЕРВОМУ И ВТОРОМУ ИНОСТРАННОМУ (АНГЛИЙСКИЙ И ФРАНЦУЗСКИЙ)

Аннотация. Исследование интернет-коммуникации непосредственно связано с изучением современного состояния языка, которому уделяется

недостаточно внимания в рамках преподавания курсов перевода первого и второго иностранных языков, и позволяет пронаблюдать изменения, затрагивающие все слои языка, знание о которых необходимо будущим переводчикам. Практические задания в рамках указанной темы для аудиторной и самостоятельной работы делают возможным индивидуальный подход к изучению перевода в различных языковых парах. Для реализации темы было разработано задание с чертами группового и индивидуального проекта. В статье содержатся примеры работ студентов на английском и французском языках, выполненные в рамках заданий при разработке темы.

Ключевые слова: интернет-коммуникация, английский язык, французский язык, перевод, социолингвистика, обучение.

The modern Internet communication study is an extremely relevant topic, as it allows to see the processes guiding the language development at the moment; to observe the changes affecting all the language's layers; to prioritize the sequence of mastering various aspects of the language; to add an individual approach to the study of translation in different language pairs, allowing to choose materials according to preferences of the course participants.

Teaching the disciplines "Practical course of translation of the first foreign language" and "Practical course of translation of the second foreign language" for bachelor full-time students of the third and the fourth year, we took this topic for classroom work and homework. To implement the topic, the following task was developed with the group and individual project features [1]:

1. At the search stage, some of the conditions were set by the teacher. The main vector of the work was preset in advance, which is the study of Internet communication and its determining factors; the last stage was based on the video blogs' material, the choice of which was entrusted to students.

In the group studying French as the second foreign language, students composed and translated parallel texts in English and French with a brief description of the sociolinguistic factors and Internet communication concepts. Thus, the role of the intermediary language was removed from Russian, which facilitated the translation process between two more lexically close languages, English and French. We can cite the following example.

"*Sociolinguistic factors* are the purposeful impact of a certain sphere of human activity on language structures. These factors include socio-economic conditions, the system of education, politics and social ideology, religion and its institutions, science and scientific knowledge. *Internet communication* is a method of communication where information is transmitted over the Internet and can be given in various forms (voice, video, documents, instant messages and files).

Les facteurs sociolinguistiques sont l'impact ciblé d'une certaine sphère d'activité humaine sur les structures linguistiques. Ces facteurs comprennent: la situation socioéconomique, le système éducatif, la politique et l'idéologie sociale, la religion et ses institutions, les sciences et les connaissances scientifiques. *Les communications sur Internet* sont des méthodes de communication dans lesquelles la transmission de l'information se fait via Internet. Les données peuvent être

transmises sous les formes différentes: la voix, les vidéos, les documents, les messages instantanés, les fichiers."

The students discovered that the Internet communication concept is multifaceted; then the group decided not to limit itself to a narrow interpretation of the term, which implies only written communication. The absence of restrictions on the number of participants, the possibility of maintaining anonymity, voluntary communication, spontaneity, proximity to oral colloquial speech, the possibility of displaying a large range of emotions, the self-expression, and the inability to express emotions non-verbally, except for the use of emoticons as the default norm in Internet communication; all this is clearly relevant for the topic. Proximity to colloquial speech causes such translation difficulties in the text as jargon, phraseology, accidental or intentional misrepresentations of spelling and violation of syntax rules, expressiveness associated with the need to recognize verbally expressed emotions, where the most difficult task is to translate jokes and to recognize irony [2].

2. The analytical stage was conducted by students and included searching, selecting and analyzing the information; for terminologically saturated blogs, a glossary was made; a plan for working with the material was outlined; personal resources were evaluated and, if necessary, the resources of the whole group were added (so, the opportunity was given to choose working in pairs, which 4 students took advantage of).

In the second foreign language groups, having studied the main features of modern Internet communication in French, representing the overwhelming influence of the language of youth, students showed interest in studying such subtopics as the influence of Arabic, English and Spanish on the French language; modern youth jargon; abbreviations; the influence of musical culture on the language; feminitives; morphological changes in modern French [3]. The subtopics were distributed among the group members. One of the tasks included a brief description of the youth language's main characteristics, as well as a template for the glossary necessary for the video blog translation.

Here is a sample of the completed task based on the French youth slang study.

"L'argot des jeunes est le langage utilisé par les personnes âgées de 14 à 25 ans dans les conversations informelles avec leurs pairs. L'argot est présent dans toutes les langues modernes. Il s'agit d'une protestation contre les clichés verbaux ou d'un désir de se distinguer, d'être original. Ce sont quelques exemples: piger –comprendre (to understand), dab, daron – père (father), dabesse, daronne, doche – mère (mother).

La méthode la plus productive pour former l'argot des jeunes français est*la métathèse*: la formation de nouveaux mots par la transposition inversée de syllabes. C'est ainsi que se forme le terme *verlan* (l'envers – reverse). En verlan, les syllabes sont réarrangées de façon à ce que la première syllabe devienne la dernière syllabe, par example: salut! – luss!, comme ça – comm'as, guérlard – larguer.

Les jeunes utilisent activement *les abréviations* dans leur discours: graff – graffiti; d'acc – d'accord, maquille – maquillage.

La plupart des emplois qui composent le vocabulaire du "français branché" moderne viennent de l'anglais: boom – vacances annuelles des étudiants, top – à la mode, flipper – c'est flippant.

Les mots anglais non seulement pénètrent dans le français, mais aussi forment un nouvel argo (argo “de luxe”), dont la maîtrise est très prestigieuse. Par exemple, raight – parfait, très bien, toons – dessins animés, kids – enfants.

L’une des caractéristiques du français familier est que certaines *lettres* et même certaines *syllabes ne sont pas prononcées* dans le flux de la parole. Parfois, les adolescents utilisent *la troncature:* gol – mongolien; tiag – santiagos (bottes mexicaines).

L’abréviation des combinaisons de mots s’est répandue au XXIe siècle: T.V.B. – tout va bien; la BU – la Bibliothèque Universitaire; la RU – le Restaurant Universitaire. Le rythme de vie croissant contribue à ce que les jeunes utilisent de plus en plus “le style télégraphique”, ce qui irrite souvent les personnes plus âgées. *Les abréviations dans les SMS* et dans les forums utilisés par les adolescents français sont: 6 NE – cinema, R29 – rien de neuf, mer 6 – merci”.

In the task describing the French youth jargon and its components correlating with the signs of the Internet language, students are given a translation of the proper jargon, while common vocabulary words are recognized from the context and do not require translation. At the same time, the speed of changes in the language is clearly demonstrated. For example, the expression je m’en fiche – ça m’est égale (I don’t care) no longer refers exclusively to youth slang; as for verlan, in recent years it has become a characteristic of the older generation’s speech, having gone out of fashion among teenagers. Students note the substitution of letters (for example, q for k, au for o, substitution for letters and numbers, as in kwa d’9), which does not affect the pronunciation, as well as the omission of apostrophes and unpronounceable letters, which, from the point of view of students, greatly simplifies the reading of French words. Alphabetic transcription of letters (for example, je T’M) is the influence of English; under the influence of English and Arabic vowels are no longer printed.

3. The practical stage included searching for a blog, analyzing its content and commenting the signs specific to Internet communication, writing an essay in English or French and giving an oral presentation to a group.

4. The next stage included the choice of the presentation form (orally or in writing; in English with examples in French or completely in French with preliminary testing of the students’ reading skills); correcting and making comments.

Here is the completed task’s sample based on the study of the English-language video blog [4], “Features of Internet communication in modern English on the example of blogger Vanessa Tiiu”.

“Every day we use the Internet for work, study, sports, distraction, self-development and communication. The Internet began to give even more opportunities; people communicate there every minute, using interesting phrases, jokes, slang, memes, abbreviations and so on. The Internet communication became a separate communication type. To expand on this topic, I want to tell you about an American YouTube blogger Vanessa Tiiu. Vanessa actively talks about health, sports, education, fashion in her videos, inspiring her followers. She is a versatile person and this attracts a huge number of people, so everyone can find what they like. First, any person is primarily interested in the appearance. I love watching her home improvement videos. She is fond of aesthetics, so each of her videos is filled with

pleasant atmosphere, beautiful things. The *1st feature* of Vanessa's Internet communication is the ability to create comfort and her desire to interact with people, positively influencing them. The *2nd feature* comes from the first one. Vanessa is not afraid to show her life, thereby trusting her subscribers. She films her home, her workouts, her daily routine, her life in general. Every time Vanessa starts the video, she greets "hello guys", "what's up?", "hello friend", creating the feeling that she really communicates with friends and there are no strict formalities. When reviewing her purchases, she likes to say "look at me", or "check it", "what do you think guys?", making her subscribers participate in the event. This is the *3d*, linguistic, *feature* of Vanessa's blog – she communicates with the viewer as with the best friend, through simple sentences. The *4th feature* is the use of abbreviations. Vanessa often says "omg", "idk", "wa?", so it is possible to single out her speech as special, memorable. Vanessa's audience is young people who give her feedback, which is the *5th feature* of Internet communication. In the comments, you can see special emotions, for example: "omg u rly inspired me!", "omg Vanessa! I'm so proud of you! You just hit 500k!!!!", "Wow Vanessa you make LA look incredible!", which is the *6th feature*. On the Internet, we can express our emotions without fear, because our profile can be anonymous, or simply because everyone does it, you are just like everyone else. The *7th feature* is that Vanessa communicates in English. This is a great practice for foreigners to listen to the native speaker and to take note of the speaker's pronunciation features, interesting words, to listen to the intonation and the manner of speech. Vanessa's speech is simple and for a person who already speaks English, it is not difficult to understand what she is talking about.

Thus, on the example of a blogger I like to watch, I revealed such linguistic features of Internet communication as communication through English, the use of simple colloquial speech, slang, the use of abbreviations, the use of expressive speech. These features help to better understand the language subtleties. The aesthetic component is the atmosphere that Vanessa creates to better assimilate the material. So, the peculiarities of communication of our idols have a good effect on us, because we take the best from them, trying to imitate in a good way".

5. The control stage included work analysis, stylistic inaccuracies and spelling errors correction, analysis of acquired knowledge, skills and abilities for professional activity. Students noted the importance of new experience working with unadapted audiovisual materials [5]. It should be noted that when studying the sociolinguistic factors affecting modern Internet communication in the first and the second foreign language classes, students who usually showed less activity during the performance of other, familiar tasks, received motivation related to attention to their personal preferences, the opportunity to take a fresh look at their favorite celebrities.

Among the factors of increased activity it's possible to mention the presence of a stage when students do not work in the classroom and can make mistakes, trying themselves in a new role without critical observation from the outside. We achieve a greater effect by dividing students' work into three parts: 1) statement of intentions, expectations and interest, 2) presentation of the research, 3) discussion of the consequences of personal discovery and empowerment in communication.

Among the 60 students invited to participate in the study, 10 people showed no interest, reporting the absence of a favorite blogger or no time to watch video blogs. So, 41 students completed the task in one way or another. The greatest interest in the topic was demonstrated by students whose academic success (and attendance) were usually mediocre. 9 students wrote an essay in English. The example shows the emotional involvement of students in the performance of the task.

The study of sociolinguistic factors influencing modern Internet communication in the first and the second foreign language classes removed the divide between academic and life spheres, between clearly defined and independently regulated in the students' perception. It seems appropriate to continue researching this topic, especially offering it as individual projects to students who usually demonstrate mediocre success and reduced motivation in classes.

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MY PAINTINGS ARE MY DIARIES. TO CLARIFY THE CONCEPT OF AN ART-GRAPHIC BIOGRAPHICAL NOVEL ON THE EXAMPLE OF THE NOVEL MUNCH BY STEFFEN KVERNELAND

Abstract. Art-graphic biographical novel is a special type of graphic novels, a combination of visual and verbal panels, a diary in diaries. Art-graphic novel Munch by Steffen Kverneland is a transmedial narrative, represented in the form of a giant verbal and visual puzzle.

Keywords: art-graphic biographical novel, transmedial narrative, puzzle.

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«МОИ КАРТИНЫ – МОИ ДНЕВНИКИ». К УТОЧНЕНИЮ ПОНЯТИЯ АРТ-ГРАФИЧЕСКОГО БИОГРАФИЧЕСКОГО РОМАНА НА ПРИМЕРЕ РОМАНА «МУНК» СТЕФФЕНА КВЕРНЕЛАННА

Аннотация. Арт-графический биографический роман представляет собой особый тип графического романа, являясь комбинацией визуальных и вербальных панелей, своего рода «дневник в дневнике». Арт-графический биографический роман «Мунк» Стеффена Квернеланна является примером трансмедиального нарратива, представленного в виде гигантского вербально-визуального пазла.

Ключевые слова: арт-графический биографический роман, трансмедиальный нарратив, пазл.

An art-graphic biographical novel is a special type of a graphic novel, not because it describes the biography and works of the artist, being at the crossroad of literature and painting, using the materials of paintings, memoirs of the artist himself and his or her contemporaries, but because it embodies a peculiar "diary" of the artist, read through the eyes of the author-illustrator.

Under art-graphic biographical novel we understand a graphic novel about the life and works of an artist in the form of transmedial narrative, characterized by an alternation of verbal and visual panels, presenting the life story and works of the artist through his or her vision and reflected in diaries and paintings. The graphic novel in general and the art-graphic novel in particular must be considered from the point of view of its intermediality. The term intermediality emerged in the last decade of the previous century. A significant contribution to the development of the theory of intermediality was made by the works of such researchers as: M. Bakhtin, R. Barth, Y. Kristev.

We understand intermediality as a special way of organizing a literary text, based on a peculiar dialogue of cultures, on the interaction in a work of art of artistic verbal codes and codes of different types of arts, including painting and graphics. In terms of modern linguistic research, we can consider the comics and the graphic novel, in particular European and Scandinavian ones, as a form of avant-garde art, a subject for study within the framework of transmedial narratology, which appeared at the mixture of studies of intermediality and multimodality.

The graphic novel took shape as an independent genre of literature in the 20th century. In 1954, by the decision of the majority of publishers, the Code of Comics was developed and approved, which streamlined the process of comics creation.

According to our classification, graphic novels are divided into:

- Philosophical (Carol Berger Wagner vs. Nietzsche", Robert Crumb, David Mayrowitz Kafka).
- Political (or political-philosophical) (Art Spiegelman "Maus: a Survivor's Tale, Joe Sacco Palestine).
- Art-graphic (or Art) (Fabrizio Dorn Gauguin. Another World, Salva Rubio, Ricard Efa Monet. Beyond the Canvas, Steffen Kverneland Munch, Oscar Pantoja Gabo. Marquez. A Tale of an Unusual Fate).
- Manga.

Let us consider the peculiarity of the genre of art-graphic biographical novel on the example of the novel by the Norwegian author-illustrator Steffen Kverneland Munch [1]. Steffen Kverneland has long been known in Norway for his comic book series based on classic Scandinavian literature and for his extraordinary approach to broadcasting of cultural memory. Back in the 1990s, he began creating a series of documentary comics in the style of Burrroughs' montage, combining quotes from literary and documentary sources, turning them into absurdist graphic novels. Steffen Kverneland worked on the graphic novel Munch for long 7 years, during which Kverneland’s idea of Munch underwent a certain transformation. As he studies Munch's works, Kverneland finds much in common with him: deceased family members, similar close friends, self-denial. Munch was first published in Norway in 2013, immediately receiving the honorary Braga Prize, awarded annually by the Association of Norwegian Publishers for the best works in the Norwegian language. Soon the book was translated into 12 languages, including English, German, French, Danish, Japanese, Korean and others.

It should be noted that the graphic novel Munch differs from all other graphic novels about artists in its versatility, mixture of styles, at first glance chaotic

alternation of visual panels, being essentially a "diary in a diary". This is the diary of Steffen Kverneland himself – the author-illustrator about how he created a novel based on Munch's diaries. If in most art-graphic novels the action begins from the artist's childhood and unfolds in a rather strict chronological order, then in the novel Munch there is no clear chronological sequence, and the novel itself begins with the discovery by Kverneland of a painting by Munch that had not been exhibited before, his dissatisfaction with "romanticized" biographies artists and the decision to create a graphic novel about Munch himself, calling it "Munch about Munch", "his vision of Munch", "manifestation in visual interpretation and selection of material", "a giant puzzle".

The graphic novel really looks like a puzzle, changing visual panels, fonts, background, illustration style, color and shades. From the very beginning, Kverneland dispels the myth of Munch as an unfortunate, half-crazy, depressive, lonely creator. From the very first pages of the novel, we see Munch's programmed success as an artist from a letter addressed to Munch by Eilert Adelsten Normann, a Norwegian landscape painter, a member of the Berlin Union of Artists, who praised Munch's first exhibition of paintings in Berlin in 1892 and called it brilliant.

However, on the next page of the novel, we find ourselves in Munch's childhood, understanding from excerpts from the memoirs of his relatives that, being an extremely sick child, he was on the verge of death many times. For Munch, color had a special symbolism, and we see the reflection of this significance of color in the novel already on its first pages. Red – as the color of blood, yellow – as a symbol of evil, illness, death, sin and vice. But if yellow does not change its symbolic meaning either in the work of Munch or on the pages of Kverneland novel, then red is undergoing a transformation.

In part of the description of the artist's first exhibition in Berlin, which ended in a "scandal, bacchanalia, fight" between young artists, together with Munch and artists of the old school, we see the floor red with blood, which, of course, is an artistic exaggeration, but reflects the magnetism of the red-scarlet color for Munch.

Arguing with classicist artists, Kverneland says in the words of Munch that he hates realism, "you need to write not what you see, but how you saw". So for the first time in the mind and paintings of Munch appear "bloody" clouds, which he once saw at sunset.

In Berlin period, Munch makes friends with Strinberg, who considered himself as Norway's greatest writer. The similarity of their views on life and art (expressionism and post-expressionism) Kverneland shows the same raincoats, colors, manner of drawing shadows on the faces of friends. Strinberg appears in the novel in yellow-gray-black colors, which reflects his worldview, passion for the occult, drunkenness, dissolute lifestyle, hatred for everyone except himself, and for himself too.

Munch's first love breaks his heart and at the level of visual panels is shown in dark brown tones and his favorite red and scarlet. Red-scarlet for Munch is passion, life, death, expression. While dark brown represents pain, death, suffering, extinction. A woman for Munch also experiences a transformation – Woman – Life – Death – Blood – Medusa Gorgon – the moment of conception – Madonna. In Munch's

paintings of that specific period (the Frieze of Life series), red and black atypical for him predominate. “And life stretches out the arms of Death, forming a chain that connects thousands of generations of the dead with thousands of generations to come” Kverneland writes, quoting Munch (Drawings with a literary sketch, published by Munch Museum, Oslo, Norway).

Munch's broken heart rushes from the streets of Berlin to the blood-red interiors of brothels. For the first time, he feels the approach of yellow madness, people on the street look at him with empty eyes, as if not noticing him, and he cannot find a place for himself in an environment that seems to be his own kind. This for the first time gives rise to a cry of pain and despair. That scream, which later became his most famous painting.

In the painting The Scream for the first time we hear the color so brightly. So Munch wrote in his diaries: “One evening I was walking along the road – on the one hand, the city and the fjord stretched out in front of me. I was tired and sick - I stood and looked at the fjord. The sun was setting – the clouds were painted red – like blood. I felt as if a cry had pierced nature. I thought I heard a scream. And I painted this picture – I painted the clouds like real blood. The colors were screaming to me”. The description and the picture itself reflect all the main signs of expressionism: the irrationality of what he saw, bloody landscapes, pain and loneliness, rejection of himself, the unbearability of the moment. The color and background in the picture plays no less, if not more important role. Munch himself, who depicted himself as a lone figure on a bridge, has no face, which creates and enhances the feeling of a nightmare and disaster. The background, in turn, rhymes the emerging soundless scream with a symphony of bloody clouds. The bridge creates the illusion of movement in such a way that, looking at the picture, we feel fear, loneliness, hopelessness, irrationality of the whole world around us. It seems to us that it is not the bridge that is passing before us, but we, lost in space, are passing along the bridge of life. Blood red, blue-black, orange colors scream, using our ability to mentally construct a color image in the auditory.

At an interactive exhibition at the National Museum of Art in Oslo, visitors were asked to complete their viewing of The Scream by listening to abstracts from Munch's diaries and the sound effect of a recorded human scream. Visitors could either listen to the recorded scream by pressing a button, or scream themselves while looking at the picture. This created the effect of immersion in the reality of the artist, the effect of involving the recipient and can be considered from a linguistic point of view as an example of a transmedial work.

The novel Munch is a verbal-graphic “puzzle” (someone or something that you cannot understand She was a puzzle to him; a game consisting of many pieces that you have to fit together correctly – a jigsaw puzzle, a game consisting of a set of questions that you have to answer by thinking carefully – a crossword puzzle [2];

PUZZLE (from English puzzle). 1. An image divided into many curly parts, which usually needs to be assembled into a single whole. 2. Logic game, the purpose of which is to restore the original image from many small parts. This puzzle they collected almost six hours! Wed collage, which visually presents: documentary photographs of Kverneland himself, self-portraits drawn with photographic accuracy,

slightly caricatured images of Munch and his contemporaries, female devils in the style of Japanese manga, portraits of Munch's contemporary artists in the style of Picasso's cubism, pencil sketches, sometimes deliberately underdrawn to reflect unverified information, the confirmation of which is not in Munch's diaries.

At the verbal level, we see a mixture of styles – from the official, deliberately verified letters of Eilert Nurmann, to Strinberg's scolding notes, the drunken arguments of Kverneland himself and his friend, to excerpts from the memoirs of Munch's relatives and friends, handwritten on paper yellowed from time to time - this is a visual row that reinforces the verbal row).

Art-graphic biographical novel Munch by Steffen Kverneland is a discovery in the world of graphic novels, giving literary critics and linguists a huge field for further research.

Conclusions

1. An art-graphic biographical novel is a special kind of graphic novel studied in the context of intermediality and within the framework of transmedial narratology with the further transformation of the novel into a transmedial work of art.

2. Color in the artist's work plays a certain symbolic role, and this symbolism is most clearly revealed in art-graphic biographical novels, since by reading the symbolism of color in the words of the artist himself and visually displaying this color through paintings and diaries, the symbolic color code of the artist becomes clear.

3. An art-graphic biographical novel develops in the reader-recipient the ability to mentally construct and hear the sound of color.

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PRAGMATIC CHARACTERISTICS OF BRITISH UNIVERSITY SITES

Abstract. One of the most rapidly evolving aspects of modern language is virtual discourse. For the research conducted within the context of this article, the pragmatic features and discourse of a British university website are of the particular importance. Data from individual locations were based on an investigation of British sites.

Although this idea is not entirely new to science – it has long caught the interest of a number of researchers still present novel interpretations of it within the framework of contemporary science. There are broad and specific ways to comprehending this phenomenon in contemporary discourse theory.

Keywords: virtual discourse, website, university, pragmatic features, communication.

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ПРАГМАТИЧЕСКИЕ ХАРАКТЕРИСТИКИ САЙТОВ БРИТАНСКИХ УНИВЕРСИТЕТОВ

Аннотация. Одним из наиболее быстро развивающихся аспектов современного языка является виртуальный дискурс. Для исследования, проводимого в рамках данной статьи, особое значение имеют прагматические особенности и дискурс веб-сайта британского университета. Ряд данных был основан на исследовании британских сайтов.

Хотя эта идея не совсем нова для науки, она уже давно вызывает интерес у ряда исследователей, но до сих пор представляют ее новые интерпретации в рамках современной науки. В современной теории дискурса существуют широкие и частные способы осмысления этого феномена.

Ключевые слова: виртуальный дискурс, веб-сайт, вуз, прагматические особенности, коммуникация.

Virtual discourse is one of the most actively developing areas of modern language. The discourse of a British university website and its pragmatic characteristics are of the particular interest for the research within the framework of this article.

This concept is not new to science, it has attracted the attention of various scholars for quite a long time, but nevertheless researchers continue to offer their new interpretations in the modern scientific paradigm. In modern discourse theory, there are broader and narrower approaches to understanding of this phenomenon.

Among the definitions of discourse, we adhere to the definition of O. V. Lutovinova, who formulated the clearest and most concise definition of the discourse, reflecting the modern understanding of this term in linguistics: “At the present stage of development of linguistics, the focus of many scientists is discourse, understood as the central unit of speech activity, the main characteristics of which are conditionality of extralinguistic forms, the event aspect, a purposeful social action, i.e. as a text immersed in the situation of real communication” [1].

The fundamental difference between speech and text is their dynamic and dialogic nature. Therefore, discourse is both a process (communication, context) and a result (text) of linguistic activity [2]. According to O. K. Melnikova, the emergence of information technology and the Internet has led to changes in the language environment. The Internet is not only a source of information, but also a key means of communication in all spheres of people's lives. In the course of the electronic revolution, there has been a revolution in language. It entailed a linguistic revolution that led to the emergence of a new networked and electronic language. The Internet discourse is a new term that has emerged from an innovative field of study that does not yet have an unambiguous interpretation [3].

Equally important in this paper is the description of such a concept as the discourse of the site or website. We adhere to the opinion of E. N. Peskova that the website is not a genre, but a tool, a resource of the Internet discourse, here the form rather than the content is more important, while possessing a peculiar genre system.

Accordingly, since online discourse is a type of the virtual discourse, copywriters use certain genres of writing, from fields such as journalism, advertising and public relations, but adapt them to websites and differentiate their lexical and pragmatic features. It should also be noted that different types of the content can vary depending on the area of the organization's online presence, the goals it wants to achieve, and the target group of the site on the case-by-case basis [4].

According to D. S. Byljeva, the Internet technologies have created asynchronous communication capability with many active communicators. This means that a group of people can be “online” for a specific time period, communicating with each other, while other people can connect or disconnect during the communication process, entering or leaving contact with other people [5]. In addition, there is a certain place on the Internet where communication takes place. Websites, forums, conferences, blogs, personal pages in social networks – all of them

have a certain “address”, in fact, a digital way of accessing resources, and the name itself implies certainty in space. In addition, chats, where most of the communication takes place in real time, may also be of interest. In blogs, communication is carried out independently of the "live" format. After the publication of the topic, audio and video materials, commentators can express their opinions, discussions and discussions can begin. However, unlike physical space, movement is possible only by “pointers” that exclude free and random movement. Movement is carried out by means of verbal requests, according to the available signs, as well as in the direction of forward and backward. For ease of communication, there are subscriptions and other ways to keep track of your favorite communicant. Initially, people appear online anonymously and impersonally. Today's communicators are assigned nicknames, behind which they hide real or fictional characters. Active communication usually requires certain linguistic and visual masks. The freedom to use names and avatars makes online communication more relaxed.

After reviewing the British websites of universities such as Cambridge, Oxford, Manchester and the London School of Economics and Political Science, we found the distinctive features of each of the sites. The main principles of British universities on the Internet can be represented by textual forms, video and audio, as well as formats that are mediated by modern technology. There can also be appeals, comments and instructions.

Common features in the composition of the design of the sites served as similar solutions to the use of tabs specific to each university, for example: Menu, News and Events, Undergraduate and Graduate. However, there are distinctive features that exist in different configurations, such as blocks containing information about the departments and faculties; information about possible employment for students and graduates; in addition, Admissions tabs that vary greatly as you move from institution to institution. We believe this is due to the peculiarities of the construction of sites in the UK, the approach to content creation, the culture of website creation and the limited opportunities for the placement of certain information on the Internet – space. There are no generally accepted approaches to website discourse, that is why there are no universal rules for their organization, as this sphere is just beginning to take its shape. Consequently, we conclude that website discourse has a number of features that result from the unique characteristics of the web page as a communication tool. First of all, these are the functionality of the site, its interactivity and the individual characteristics of the target audience.

The main visitors to the university sites are Undergraduate; Graduate and Postgraduate; Students and Alumni, as well as educators and university employees – Staff and possible employers – Business. Each site has a tab – Menu, but at the next stage there are difficulties, this is due to the fact that to register a course from the site of LSE you need to go to the tab Apply, by this request the navigation is most convenient at the site of Oxford University, where the main page immediately has a tab Admissions with the ability to move to the tabs: Undergraduate, Postgraduate, Continuing education. The websites of Cambridge and Manchester universities differ from the others as they do not have this transition at all, and in the menu you can find the following tabs: Undergraduate study, Postgraduate study, Alumni.

As the analysis of the material shows, we should note the frequent use of rhetorical questions used to reinforce and emphasize specific ideas in the university discourse of the websites. For example, on the website of Oxford University when using the Undergraduate tab, there is a rhetorical question addressing potential students: “Do you love to question and have an appetite for knowledge? Do you consistently achieve top grades in your class? Are you looking for an exceptional education in an environment which values individuals for who they are? Oxford might be the place for you”. Each of these appeals realizes the appellative function of language, which is aimed at prompting the addressee to a certain action using a communicative interrogative construction. Below on the page of this university we also see expressions prompting to action, but in the imperative form: watch, learn more, discover, explore, download, don`t miss and the phrase: make sure you know. Similar constructions are also found on the University of Manchester website, also in the Undergraduate tab: for example, constructions with the imperative (speak to us, find out, explore, prepare, search) and rhetorical questions (Where will your degree take you?).

However, on the Cambridge website the rhetorical questions are in the center of the Undergraduate block: What can I study? Where will I live? How do I apply? At the beginning of the page information is presented by an animation consisting of 4 slides, which also include rhetorical questions, combined with incentive sentences, for example: “Apply by January 25 for our Foundation year in class in Arts, Humanities and Social Sciences. Thinking about university? Join our Think Cambridge webinars for inspiration. New events and webinars for those supporting students to apply to Cambridge. Explore Cambridge and our colleges and departments via the Virtual Tour”. All slides are hypertexted and linked to other pages. Appeals on the LSE website when you go to the Undergraduate page: “Discover what it is like to complete your undergraduate degree at LSE; Find your degree; Find out more about your offer; Read more about what to expect; Watch videos, etc”. As you know, imperatives are used to call people to action. In the imperative, it is not the message itself that is important, but the action that follows. For example, university websites repeat verbs such as: watch, find and find out, explore. University websites in the UK, due to the influence of the characteristics of the Internet discourse, are based on the dominance of text containing accessible information and explanatory materials.

As the results of the study show, dialogicity is an integral part of the structure of the British universities websites creation. The communicative effectiveness of websites is achieved with the help of numerous imperatives, rhetorical questions and appeals to the target audience. Analysis of the linguistic and non-linguistic components of the text shows that their composition depends on a combination of linguistic and pragmatic characteristics of modern website construction and web technologies. Thanks to new technology and language features, a unified visual, structural, and functional representation of the university can be achieved in a way that is attractive and interesting to readers of the Internet.

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CONCEPTS “COLLEGE” AND “TECHNICUM / TECHNICAL SCHOOL” INTERPRRETATION IN THE EDUCATIONAL DISCOURSE

Abstract. This article is devoted to studying structural and functional value of the concepts “college” and “technicum / technical school” in their use in the language and their linguistic interpretation, which implies different modes of conceptualizing. Both concepts are borrowed, their representatives came to Russian from Latin through the mediation of various languages (“college” through English and French, “technicum / technical school” through French and German). The authors identify the main motivating and conceptual features in the structure of the concepts “college” and “technical school” in Russian linguistic culture. As units of the Russian conceptual picture of the world, the concepts of “college” and “technicum / technical school” retained their main conceptual feature of “educational institution” throughout their existence, only aspects of their perception were changing, for example, the perception of a college was either as a higher or as a middle educational institution; in the interpretation of the concept “technical school” only the characteristics of the acquired specialty changed: at first, technical schools provided only a technical profile, later they introduced profiles of various spheres.

Keywords: borrowed concept, motivating features, conceptual features, interpretation, concept structure, conceptual picture of the world.

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ИНТЕРПРЕТАЦИЯ КОНЦЕПТОВ «КОЛЛЕДЖ» И «ТЕХНИКУМ» В ОБРАЗОВАТЕЛЬНОМ ДИСКУРСЕ

Аннотация. Данная статья посвящена изучению структурно-функционального значения понятий «колледж» и «техникум» в их употреблении в языке и их лингвистической интерпретации, предполагающей разные способы концептуализации. Оба концепта являются заимствованными, их репрезентанты пришли в русский язык из латыни через посредничество различных языков («колледж» через английский и французский, «техникум» посредством французского и немецкого языков). Авторы выявляют основные мотивирующие и понятийные признаки в структуре концептов «колледж» и «техникум» в русской лингвокультуре. Как единицы русской концептуальной картины мира концепты «колледж» и «техникум» сохраняли свой основной понятийный признак «образовательное учреждение» на протяжении всего времени своего существования, менялись лишь аспекты их восприятия. Так, например, менялось восприятие колледжа либо как высшего, либо как среднего учебного заведения, в интерпретации концепта «техникум» менялась лишь характеристика приобретаемой специальности: сначала техникумы имели только технический профиль, позже профили всех сфер.

Ключевые слова: заимствованный концепт, мотивирующие признаки, понятийные признаки, интерпретация, структура концепта, концептуальная картина мира.

One of the main functions of a language is its interpretive function. It provides the possibility of almost endless generation of new meanings. This possibility is largely based on the variety of conceptual representations of the surrounding world, which convey different types of knowledge and, accordingly, determine the many ways of their representation in the language. From this point of view, it is still relevant to discuss the problems of conceptualization of the world and the typology of knowledge, or rather the units, which underlie the formation of language units and their meanings. According to N. Boldyrev, conceptualization is the cognitive process of identifying and comprehending objects, events, their characteristics and fixing the results of cognition in the form of units of knowledge – concepts [1].

Concepts form a fundamental network of the basic notions of national culture existing outside time and space; “they are known intuitively and perceived by all

carriers of a given culture in the same way, but with different strength, energy and impact" [2].

This article is devoted to studying structural and functional value of the concepts "college" and "technicum / technical school" in their use in the language and their linguistic interpretation, which implies different modes of conceptualizing.

The main terms used in the article are as follows: a motivating feature that serves as "the basis for naming a certain fragment of the world is an internal form of a word" [3] and features of concept that are actualized from their dictionary meanings in the form of semantic components (semes) of a word – a representation of the concept [4].

The conceptual structure must be studied starting with the primary features. Such features are classified as motivating. Motivating features are consistently defined according to the etymological and historical-etymological dictionaries of the Russian language.

The analysis of eight Russian etymological dictionaries provided no information about concept "college". The word "college" was not found in them, which is most likely due to the recent appearance of the word in everyday life. However, the Russian explanatory dictionaries of D. Ushakov, Kuznetsov, the Pedagogical Terminological Dictionary, the Great Encyclopedic Dictionary, the Great Soviet Encyclopedia and the Great Dictionary of Foreign Words, etc. agree that the word "college" comes into the Russian language from English. To find out the full etymology of the word, one needs to refer to the etymological dictionaries of the English language. Let us analyze a few dictionary entries.

Online Etymology Dictionary runs that the word appeared in the late 14c., its meanings are as follows: "organized association of persons invested with certain powers and rights or engaged in some common duty or pursuit," especially "body of scholars and students within an endowed institution of learning," also "resident body of ecclesiastics supported by an endowment," from Old French college "collegiate body" (14c.) and directly from Latin collegium "community, society, guild," literally "association of collegae," plural of collega "partner in office," from assimilated form of com "with, together" (see com-) + leg-, stem of legare "to choose," from PIE root *leg- (1) "to collect, gather" [5]. According to the etymological dictionary of the English language by W. Skeat, College takes its origin from "Lat. collegium, a college, society of persons or colleagues. – Lat. collega, a colleague. Der. collegi-an, collegi-ate, both from Lat. collegi-um" [6].

An etymological dictionary of modern English by E. Weekley suggests French, Latin, and Early English origin of "College" in the meaning of 'community'and 'partnership':"FromFrench 'college', Latin 'collegium' (see colleague),Earliest English 'sense, community', or in reference to Oxford and Cambridge". In the similar meanings of the "persons united by the same office, college, union, company" (from Old French and Latin) the etymological descriptions can be found in the entries of A Comprehensive Etymological Dictionary Of The English Language By E. Klein [7] and Oxford Advanced Learner's Dictionary [8]. These two dictionaries suggest one more meaning that was not available in the dictionaries mentioned before: college is 'a union formed by law'.

All dictionaries unanimously state that the word came to English from French, and to French from Latin. Collegium, which in the historical context meant “cohabitation”, or in free translation, it can also be referred to as “dormitory”. This refers, of course, to the cohabitation of teachers and students. This form of educational institution is originated in ancient Greece, then is resumed in Europe in the Middle Ages. Teachers and students used to live together, i.e. on the same territory or in the same place, where the instruction was conducted not in the form of lectures, but in the form of seminars, jointly discussing and studying scientific theories. The form of such ‘collegiums’ became prototypical for the first scientific and educational settlements, which later became world-famous prestigious educational institutions, such as Cambridge. The first college – Peterhouse – was opened in Cambridge in 1284. Later, the principle of colleges spread throughout the world, many American educational institutions are called colleges and are arranged on the basis of campuses. The teachers lived not far from the institutions.

The research resulted in the allocation of the following motivating features of the concept “college”: persons / people, students, learning, society / community, union / united / together. The analysis of the explanatory dictionaries assigned such conceptual features as: 1. Type of educational institution (“educational institution”, “academic institution”, “university”); 2. Level of education (“higher education”, “secondary education”); 3.specialty (“specialty”).

If to follow the etymological way of the Russian word “technicum”, it cannot be found in most of the Russian etymological dictionaries. The Etymological dictionary of the Russian language by A. Sitnikova (2005) traces the origin of the word from French, through it, approximately in the middle of the 20th century (Fr. technicum – “technical school” – derived from technique – “technology” (cf. German Polytechnikum – “higher technical educational institution”) [9]. To German, the word came from the Latin language: from the word “technicus”, which means “master”, “specialist”. And it, in turn, came from the ancient Greek root “τέχνη”, which means “skill”, “art”.

As a result of the analysis of the data of etymological dictionaries, the motivating features of the concept “technical school” were assigned. They are: “industry”, “technician”, “technology”, “skill”, “master”, “specialist”, “art”, “school”.

The conceptual features go back to motivating ones. The Great Soviet Encyclopedia describes the technical school as the adopted in the USSR and a number of other countries name of the main type of secondary specialized educational institutions that train personnel with secondary specialized education for various industries, agriculture, construction, transport, and communications [10].

A technical school is a secondary specialized educational institution that implements the basic professional educational programs of secondary vocational education level. The root of the word technical school, as it were, emphasizes a direct relationship to technology. But in fact, technical schools were culinary, and musical, and pedagogical, and agricultural, and economic.

A college in Russia today is a secondary specialized educational institution that provides both general and special education in a variety of professions. The status of

a college (as well as a technical school) is defined in the Regulations on an Educational Institution of Secondary Vocational Education, approved by the Decree of the Government of the Russian Federation.

According to the definition of the Regulations on an Educational Institution of Secondary Vocational Education, the difference between a college and a technical school is as follows: colleges provide advanced training programs for secondary vocational education. That is, in the college there is in-depth training, but this word is not in the definition of a technical school. In fact, no one measured this “depth” and some scholars assure that the difference between a college and a technical school is only in the name.

In conclusion, we note that despite completely different etymology (the words are taken from different languages), the concepts “college” and “technical school” have some characteristics in common. The both are borrowed concepts of the educational sphere and they have several common conceptual features, e.g.: “educational institution”, “secondary education”, “specialty”. The concept “college” as a unit of the Russian conceptual picture of the world has retained the main feature of “educational institution” throughout the entire time of its existence, the only changing aspect was the perception of the college as a higher or secondary educational institution. The concept “technical school” as a unit of the Russian conceptual picture of the world retained its main feature of the “educational institution” throughout the entire time of its existence as well, the only changing characteristic was the major to be obtained: at first only a technical profile, later the profiles of all spheres.

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THE EVOLUTION OF THE STYLE OF MODERN BUSINESS WRITTEN COMMUNICATON IN ENGLISH

Abstract. This article can serve as an approbation material for a master's thesis. The topic of the dissertation has not yet been formulated, but it is assumed that the study of the business language on the material of economic texts, the results of the study may be the peculiarities of the translation of the specified vocabulary in the context of comparing Russian and English.

Keywords: style, dynamism, business, dynamic development, correspondence, word.

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РАЗВИТИЕ СТИЛЯ СОВРЕМЕННОЙ ДЕЛОВОЙ ПЕРЕПИСКИ НА АНГЛИЙСКОМ ЯЗЫКЕ

Аннотация. Данная статья может служить апробационным материалом для магистерской диссертации. Тема диссертации еще не сформулирована, но предполагается, что при изучении делового языка на материале экономических текстов результатами исследования могут стать особенности перевода указанной лексики в контексте сопоставления русского и английского языков.

Ключевые слова: стиль, динамизм, бизнес, динамичное развитие, корреспонденция, слово.

This article raises the theme of the evolution of business written communication in modern English. The study is informative in nature and is aimed at describing the features of the style of business communication in English. The results obtained show that at the present stage of development of all spheres of human professional activity, the process of their emotionality takes place, which finds its linguistic design. There are examples of communication between a bank and its customers. There is a process of emotionality of business communication as a result of personification in business correspondence. The study was completed in the aspect of emotiology.

The dynamism of the style of modern business communication is manifested in the complex interaction and interpenetration of elements of conversational and

everyday style into it. In this article, we reveal the main features of the manifestation of such dynamism by the example of business correspondence texts in modern English.

The official business style is one of the functional styles of the national language. Each functional style, including official business style, exists and is used in two versions – oral and written – depending on the form of communication – direct or indirect written documents.

Initially, the official business style was fixed in writing. This is what Russian linguists say. “The intrinsically conditioned commitment of official business speech to written fixation seems to be undoubted. The nature of socially, legally significant documents requires from the relevant texts both the immutability of the wording and the possibility of repeated reference to them, which is connected precisely with the written form of their existence” [2]. The origin of written business speech was associated with the needs of written fixation of legal relations existing in society [2].

D. N. Shmelev notes “the unchangeable, frozen character, archaic lexical composition and syntactic design of business texts” [2], which is caused by the very need to preserve the document. At the same time, he notes the mixing of speech styles in the business sphere. “The presence of conversational and everyday elements against the background of the official business style is explained by the author by the immediacy of communication, the real presence of the interlocutor, the nature of the situation in which communication takes place” [2]. The presence of other style elements in a functional style shows its inferiority.

The presence of colloquial everyday elements in business speech and economic texts is caused by the author's desire to influence the addressee's own emotional expression, and is also an expression of his own attitude to a particular situation.

Business is a sphere of human activity that is most susceptible to the emotional interaction of its participants, since people's communication flows around material goods. Therefore, actions in this professional field (such as business correspondence, business conferences, negotiations, etc.) are always emotionally colored with the help of certain words and expressions. So, emotionality turns into emotivity.

Consider the dynamism of the style of business correspondence in modern English. We find a comprehensive study of the style of the English language in the works of I. R. Galperin. “The purpose of a business speech is to reach an agreement between two interested parties. This also applies to business correspondence between representatives of various firms, and to the exchange of notes between states.” [1].

There are a few features worth highlighting:

1. The presence of specific vocabulary: different terms and phraseology. For example, the words extra revenue, taxable capacities, etc.

2. Archaisms. I. R. Galperin wrote about the function of archaisms (henceforth, aforesaid). In the language of a business document, archaisms reflect archaic relationships between people. British researchers write that for several centuries the laws of their society do not changed. Therefore, there are many archaisms in the English language.

3. Use of Latin and French words.

4. The presence of business style for all protocols is an abbreviated, abbreviated, compound abbreviated word.

5. The absence of figurative means (metaphors, metonymy, etc.). Mainly in this style, words are used in the main subject-logical meanings. However, emotionally colored vocabulary appears in some documents.

6. Business letters have a strict compositional form.

These features of the style of business English have undergone changes and transformations over time.

Speech styles in English show great resilience and resilience.

The main feature of the dynamic development of the style of business correspondence in English is the introduction of individual traits, private forms of its manifestation. Let's look at examples of business correspondence between private banks and their clients.

Example 1.

The bank sent the wrong credit history to the client and he writes a complaint:

“Some time ago you sent me a copy of my medical history. I requested this document from you a few months ago. There were many mistakes in the document. Let's start with your main mistake. I do not use the credit conditions of your bank. In this regard, all these huge overdue payments have nothing to do with me. I have made changes to the document myself and am sending you a report so that you can correct it.”

In this example, the displeased-irritated tone of the letter is clearly visible. The author does not hide his emotions. His emotions are clearly reflected through the choice of certain expressions (Let's start with your main mistake.), epithets and superlatives (main mistake, huge overdue payments), incentive sentences (I have made changes to the document myself and am sending you a report so that you can correct it.).

Example 2.

“The Bank informs the client about the refusal of the loan.”

“We express our gratitude to you for choosing our bank to receive a loan.”

Unfortunately, we have to inform you that your loan request has been refused.

We thank you for your interest in the business of providing cosmetic services and wish you good luck in the future in implementing your business idea, but your current debt history shows your inability to take on additional monthly payments and may put you in a difficult financial situation.

Pay off all your payments and we will review your application.”

The letter uses special means of expression - emotive, as it is important for the bank to continue communication with the client. It is important for the bank to keep its customers, therefore, in order to mitigate the negative tone of the rejection letter; the addressee uses these means of influencing the addressee: expressions of gratitude and apology (We express our gratitude to you. Unfortunately, we must inform ..., we thank you for your interest.).

In conclusion, it is necessary to cancel once again that at the present stage of development of all spheres of human professional activity, a process of their

emotionality takes place, which involves the use of certain means and has its own language design.

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PUBLIC SPEAKING CHARACTERISTICS AT TED TALKS

Abstract. This article discusses the features of public speaking on the TED Talks website. The authors refer these types of speaking to scientifically productive lectures that combine interaction, dialogue, emotionality of conducting the lecture and meaningful innovative content, including argumentative, convincing examples, facts, evidence, documents, scientific evidence, persuasive beliefs and a focus on broadening participants' perspectives, mobilizing their experience and knowledge, which is important to stimulate listener's thinking.

Keywords: lecture, public speaking, TED talks, characteristics of TED talks.

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ОСОБЕННОСТИ ПУБЛИЧНЫХ ВЫСТУПЛЕНИЙ НА САЙТЕ TED TALKS

Аннотация. В статье рассматриваются особенности публичных выступлений на сайте TED Talks. Автор относит данный вид выступлений к лекциям научно-популярного характера, сочетающим в себе интерактивность, диалогичность, эмоциональность подачи материала и содержательную инновационность, включающую аргументированные, убедительные примеры, факты, документы, научные доказательства и направленную на расширение кругозора участников коммуникации, мобилизацию их опыта и знаний, что является важным для стимуляции мышления обучающихся.

Ключевые слова: лекция, публичное выступление, сайт TED Talks, особенности сайта TED Talks.

Today, we consider public speaking, and public lecture as its genre, to be the main form of presenting a volume of systematized information as a guiding framework for students'/adults' independent learning. A lecture delivered at the current level of scientific and cultural development is an intellectual labor of profound creativity. With the lecturer's erudition, he or she can dialogue with and control the audience. Let's look at the role of the lecture. It does not replace reading a book, but only encourages reading and researching what you have read on your own. The lecture can also be used to acquire the general knowledge needed in practice and to develop interest in a particular discipline [1].

It is important to explore the ways of extracting knowledge from a lecture format that is broad in scope but rich in academic material. As evidenced by the number of views and subscribers to the TED Talks channel, posting lectures in podcast format on various platforms such as YouTube has become very popular recently [2].

Lectures are the main form of providing large amounts of structured information to guide students in their independent work. According to S. I. Ozhegov's explanatory dictionary, a "lecture" is "an oral presentation of an academic subject or theme, as well as a record of that presentation" [3]. As in traditional schools, lectures based on active methods have the important advantage of being interactive. Unlike traditional lessons and lectures, students listen and watch, memorize and take notes of the learning material, and can also re-watch video segments. In an interactive format, students can ask the teacher questions about incomprehensible passages or sentences and receive a more detailed and comprehensible explanation [4].

A TED lecture is a distinctive speech of (rhetorical) discursive genre that differs from other conversational popular science genres and lecture types, where real communication is primary and the Internet is secondary. Typical of TED lectures is a strict local time format and a carefully prepared approach. The style of TED talks is characterized by a compact organization and clear logic. The dialogue is highly authoritative and persuasive [4].

The genre-forming features of TED lectures should be noted here, and in order to highlight them, it is necessary to refer to the speech model proposed by T. V. Shmeleva. The model identifies the following characteristics of genre formation: the purpose of communication, images of the author and addressee, past or future elements, and linguistic elements. The basic structure of a classical lecture is the formulation of the topic, the presentation of the outline and recommended readings for independent work and the strict adherence to the plan of that class. An educational interactive lecture is a format that allows participants to become involved and remain in complete control. In an interactive lecture, a passive presentation can easily be used as an active experience [5].

Considering that an interactive lecture is an educational process that develops speech skills through various combinations in addition to the use of active methods, what is the active method and what is needed to conduct an interactive talk? Let's touch on how active methods are used. Talks, lectures or "interaction with the audience" are the most common and relatively simple form of actively involving students in the learning process. In a lecture, the teacher and the class are in direct

contact with each other. Lectures and talks have the advantage of being student-centered, determining the content and pace of the presentation, and directing students' attention to the more important issues of the topic. Conversation as a teaching method has been known since the time of Socrates. It is the simplest method of personal learning, consisting of direct contact between the parties. The effectiveness of lectures and talks in group teaching is reduced by the fact that it is not always possible to involve all students in a two-way exchange of ideas [6]. This is primarily due to time constraints, even in small groups. At the same time, group discussions can broaden participants' perspectives and mobilize their experience and knowledge. This is very important for stimulating student thinking. In conversations during lectures, teachers should be careful not to leave questions unanswered. This is because the questions become rhetorical and do not stimulate the student's thinking fully. In a lecture-discussion, unlike a lecture-dialogue, the teacher not only uses answers to students' questions while presenting the lecture material, but also organizes a free exchange of views between logical sections.

A discussion is an interaction between the teacher and the students, a free exchange of ideas and opinions on the issue being studied. It enhances the learning process, increases the cognitive activity of the audience and, importantly, can be used by the teacher to manage the collective opinion of the group and to persuade or dissuade some students from negative actions. It helps to overcome attitudes and misconceptions. This effect can only be achieved through the right selection of discussion questions and skillful, thoughtful leadership. Therefore, participation in an interactive learning process that simultaneously involves teachers and students in various combinations (teacher-student, student-student, student-teacher), in this case an interactive lecture, greatly enhances the quality of learning. The use of interactive techniques and methods can improve the learning process, increase students' interest and effectiveness in the field of study, and achieve a deeper understanding of the material. On the one hand, two-way teacher-student interaction facilitates the understanding of different categories of students in the field of study and enhances the quality of learning. On the other hand, such lectures place high demands on the teacher training and qualifications. They should not only be familiar with traditional teaching methods, but also be able to use modern science and technology and modernize them according to the needs of their students [7].

In today's context, a lecture, especially at TED Talks is a type of intellectual labor that demonstrates deep scientific and creative thinking, erudition, culture, and the lecturer's ability to manage himself and the audience. The form of the lecture cannot be replaced by another when there is no new material in the textbook, when there is outdated material in an existing textbook, when a topic is particularly difficult to understand or absorb and the teacher needs to revise his/her methodology, when there are conflicting concepts in a major scientific issue that the teacher must cover objectively, or when emotions that the teacher personally gives are important in forming the students' opinions, and when the ideas are worth spreading (which is a TED Talks mission). The aim of such a lecture is to give students an opportunity to think on the topic and to deepen the awareness on the issue, to continue working on the problem on their own. The Russian scientist-educator, philosopher S.I. Gessen

(1887-1950) emphasized the significance of a lecture: “The purpose of a lecture is not to replace reading a book, but to encourage students to read and examine what they have heard independently” [7]. At the same time, a lecture is an economical way of acquiring, in a general way, the basic knowledge necessary for cognitive activity in practical classes, developing interest in a particular subject. Thus, the basic requirements for the lectures as a public speaking genre are as follows: giving scientific and informative (at the level of modern science), evidentiary and argumentative, convincing examples, facts, evidence, documents, scientific evidence, using the emotional format of presentation, activating listener's thinking, posing introspective questions (for reflection), providing clear structure, logic of disclosing successive questions, and methodological processing: deriving main ideas and provisions, emphasizing conclusions, repeating in different formats, outlining.

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PECULIARITIES OF THE PEDAGOGICAL SYSTEM BY K. S. PETROV-VODKIN

Abstract. Kuzma Sergeevich Petrov-Vodkin (1878-1939) was an outstanding Russian and Soviet artist who made an important contribution to the development of Russian art and artistic education system. The study of his original and symbolic creative works is relevant to the present day. In this paper, we consider the peculiarities of his theoretical concepts ("spherical perspective", "tricolor system"), which were reflected in his work and had a significant impact on creating the artist's own pedagogical system he actively used in teaching his students.

Keywords: K. S. Petrov-Vodkin (1878-1939), cosmism, spherical perspective, tricolor system, artistic education, art theory, 20th century art, Russian art.

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ОСОБЕННОСТИ ПЕДАГОГИЧЕСКОЙ СИСТЕМЫ К. С. ПЕТРОВА-ВОДКИНА

Аннотация. Кузьма Сергеевич Петров-Водкин (1878-1939) был выдающимся русским и советским художником, внесшим значительный вклад в развитие отечественного искусства и системы художественного образования. Исследование его самобытного и наполненного символизмом творчества продолжает быть актуальным по настоящее время. В данной статье рассматриваются особенности его теоретических концепций («сферическая перспектива», «система трехцветия»), нашедших отражение в его творчестве и оказавших значительное влияние на формирование собственной педагогической системы художника, которую он активно использовал при обучении своих учеников.

Ключевые слова: К. С. Петров-Водкин (1878-1939), космизм, «сферическая перспектива», система трехцветия, художественное образование, теория искусства, искусство XX века, русское искусство.

Kuzma Sergeevich Petrov-Vodkin (1878-1939) entered the history of arts as an outstanding artist with an extraordinary mind and talent. Born in the small town of Khvalynsk on the banks of Volga in a poor family, the young man could get a serious art education, travel to European countries, teach students, and develop his own pedagogical system.

During his life, Kuzma Petrov-Vodkin gave lectures and published articles on the philosophical and theoretical issues of arts. He talked about the meaning of arts in the modern world, about color and shape, and about the ways of a person's interaction with the environment. The thoughts and ideas expressed by Kuzma Petrov-Vodkin in his works were reflected in the concept of *The Science of Seeing*.

Kuzma Petrov-Vodkin saw a serious dissonance in the relationship between humans and nature. "*Man knows the roundness of the earth, its movement on the axis and along a circle around the center – the sun, but he doesn't feel it at all: his eye doesn't see, his ear doesn't hear his planet*" [1, p. 452], the artist stated. According to him, humans, unlike animals, have forgotten how to know their way around in the world without using technical devices; they have lost touch with nature.

The ideas of cosmism (a trend in the Russian religious philosophy based on the concept of Cosmos and man as a "citizen of the World", being developed in the ideas of N. A. Berdyaev, V. I. Vernadsky, N. F. Fedorov, K. E. Tsiolkovsky, etc.), which gained popularity in the late 19th – early 20th centuries, had a strong influence on artist's worldview. However, it is worth noting that Petrov-Vodkin widely used the term of "planetary" only as an artistic concept without giving it an express definition in any of his works. We can assume that he considered the concept of "planetary" rather in a spatial sense characterizing the relationship between the sun, the earth, and the object.

Kuzma Petrov-Vodkin strongly disapproved of the decorative arts, believing that the measure of value of such works "*is only their pleasantness (people like them), and not an unconditional necessity*" [1, p. 455]. As the artist points out, such works of art "*are a call to action, and not the action itself <…> they describe an object without being objects themselves*" [1, p. 455].

Kuzma Petrov-Vodkin contrasted the connection of man with nature and his interaction with technology, which he severely condemned. "*Wheels, levers, analyses, and telegraphs devour their own inventors who confusedly rush about among the absurd, hostile, and bestial social relations*" [1, pp. 451–452], the artist argued. Here, we can recall the statement of N.A. Berdyaev that, with the help of a machine, man tried to master the elements of nature, but instead, he became a slave to the machine he created and the material social environment [2, p. 542].

An important aspect of creativity Kuzma Petrov-Vodkin worried about was the relationship between shape and color. In his lecture *The Science of Seeing*, he noted: "*The first impression that our eye receives from an object is the shape*" [1, p. 460]. According to Kuzma Petrov-Vodkin, the eye first perceives the force of tension with which the object rose up from the surrounding space. At this stage, the object boundaries are of great informative value. Next, according to the artist, the human eye perceives the environment that oppose to this object.

Kuzma Petrov-Vodkin attached great importance to bringing his *The Science of Seeing* to life as part of his teaching activities. The artist believed that the modern educational system was based on "*imposing on children and exhausting from them our adult understandings of beauty through illustrations of literary texts*" [1, p. 458], referring to the R. W. Emerson's statement: "*We teach children to be like us, but we don't give them the courage to be what they can be*" [1, p. 458]. Kuzma Petrov-Vodkin noted that if, in his childhood, a person still knows how to "see" objects, how to distinguish between their oddities and dissimilarity, the general education school program blunts this ability. According to the author of *The Science of Seeing*, mankind "*goes blind, taking the visible on the say-so*" [3]. In Kuzma Petrov-Vodkin's opinion, a person learns to draw conclusions about objects by similarity, not by contrast, whereas, according to *The Science of Seeing*, the development of thinking should be based on the awareness of differences between objects [3]. Kuzma Petrov-Vodkin argued that the school system taught children to deal only with the names of things, teaching them to remember, without giving them any material stuff. It should be noted that Kuzma Petrov-Vodkin, who taught until 1917 at the art school of E. N. Zvantseva, and then, at the Academy of Arts in Saint Petersburg, had an opportunity to influence the education system and apply his *"Science of Seeing"* in practice.

Petrov-Vodkin's reasoning about shape and color found further development in the theories he created about "spherical" perspective and "tricolorness", the fundamentals of which the artist used for a long time in teaching painting to his students at the Academy of Arts. Thus, for instance, Soviet artist A. N. Samokhvalov, a student of Kuzma Petrov-Vodkin, recalls his teacher's manner of teaching as follows: "*He taught that all things and everything we see – people, buildings, ships – we see in their relationship with the world space, and moreover, we see with two eyes, and what's more, we see while moving <…>. We perceive the world in time, and this time must be brought onto the canvas*" [4, p. 55].

It is worth saying that Kuzma Petrov-Vodkin himself did not like to call his perspective "spherical"; he preferred a more artistic wording: "live visibility". Besides, the perspective constructions he used did not always meet the criteria of a spherical perspective, namely:

- existence of multiple points of view;
- inclination of vertical axes towards the center;
- turning planes to the foreground.

When analyzing the perspective constructions by Kuzma Petrov-Vodkin, some researchers assert that "*the convex surface of the center, while drawing near the viewer, completely fills his field of view and displaces the periphery space; at the same time, the displaced (concave) surface seems to surround the viewer from all sides*", while creating effect of "entry" into the painting [5, p. 136]. In the studies of other researchers, it is stated that a sense of "planetary" in the works by Kuzma Petrov-Vodkin is created by "*both those paintings where you can see the curvature of rectilinear forms and those where there is not even a hint of such a curvature*" [6, p. 323]. Therefore, the artist was interested in disturbing the peace, "*the feeling you experience, for example, on board a ship, when the waves of the sea, falling and*

rising, make it seem that the horizon tilts, the ground is slipping under your feet" [6, p. 324].

Let us consider the painting by Kuzma Petrov-Vodkin *Noon. Summer* (1917), depicting a series of peasant life events, from birth to burial. There, the "spherical perspective" created by the artist fully manifests itself. It is known that the impetus for creating this picture was his father's death which had happened shortly before. The painting depicts the artist's native hilly landscape which can be seen in many of his other works. There is no horizon line in the painting, whereas series of hills, forests, and fields opens up to the viewer; we look at the objects depicted as if we had lost the ground under our feet and soared into the air.

A funeral procession moves along the road. Four men are carrying a coffin, followed by several women and children. However, this picture is not perceived in a tragic way. Cows are grazing near the road; a man is chopping wood; mowers are resting on the lawn nearby; a girl is carrying a yoke on her shoulders, a mother caresses her child. In the distance, you can see an infinite space: forests, meadows, and rivers, compared to which human figures are insignificant and small, and death seems to be just an episode in a series of human life events.

The system of "three colors" (or the so-called "tricolorness") by Kuzma Petrov-Vodkin is a coloristic unity consisting of a harmony of three primary colors: red, blue, and yellow. In this system, we can find a close connection with both daily national and artistic traditions, and with the classical principles of Western European art.

As an example, we can consider the painting *Girls on the Volga* (1915) where many researchers see a connection with the traditions of the early Italian Renaissance and ancient Russian frescoes. Thus, the conditional shade of the character's faces can recall icon paintings, whereas graceful frozen gestures and postures are reminiscent of images of the Quattrocento [7, p. 71]. In this work, the artist refers to the plot of bathing women, beloved by many artists: young women came to a river and slowly take off their clothes. Unlike many other artists who turned to this plot wanting to show the nude female nature, Kuzma Petrov-Vodkin presents his heroines dressed, paying attention to the almost musical plasticity of their movements and repercussions of yellow, red and blue tones, so beloved by the artist.

The creative legacy of Kuzma Petrov-Vodkin, as well as the artist's philosophical ideas reflected in it, should be considered through the prism of religious and philosophical ideas in Russia, which became widespread in the late 19th – early 20th centuries. On the other side, the basis of the artist's theoretical concepts that gave impetus to developing his own pedagogical system, was his own reasoning about the color, shape, and compositional features of a painting, which were further developed in the works of a number of his students.

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ANDRAGOGY AS A SCIENCE OF ADULTS EDUCATION

Abstract. Andragogy contributes to disclosure of personality, helps to find one's place in life and to realize one's hidden abilities.

Keywords: disclosure of personality, branch of pedagogical science, self-realization of a person, self-education.

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АНДРАГОГИКА КАК НАУКА ОБРАЗОВАНИЯ ВЗРОСЛЫХ

Аннотация. Андрагогика – наука, которая раскрывает личность, помогает найти место в жизни, реализовать собственные способности.

Ключевые слова: раскрыть взрослых, область педагогической науки, саморазвитие личности.

The whole history of the formation and development of human learning process as an independent area of people’s activity indicates that learning should be continuous and adaptive. Since the personnel of enterprises are adults, training should be carried out taking into account their age, socio-psychological, national and other

characteristics. This is what modern pedagogical science is aimed at - andragogy, a branch of pedagogical science that reveals the theoretical and practical problems of teaching, educating and educating an adult throughout his or her life.

In a broad sense, andragogy should be understood as the science of personal self-realization of a person throughout his or her life. As you know, some people realize themselves at a young age, but many people open up gradually, accumulating knowledge, experience, skills and abilities throughout their lives. Andragogy contributes to disclosure of personality, helps to find one's place in life, and to realize one's hidden abilities.

Andragogy implements the most ancient formula of learning - we learn not for school, but for life.

As a science, andragogy is separated from pedagogy, since pedagogy is the education and upbringing of a child, while many results actually turn out to be important only for the school.

The concept of "andragogy", the essence of andragogy

The concept of "andragogy" was introduced into scientific use in 1833 by the German historian of pedagogy A. Kapp. Literally translated, andragogy is the "knowledge of an adult" (human-knowledge). Since the term is generated by pedagogical reality, we are talking about leading through education. Andragogy can be viewed from different perspectives as:

- area of scientific knowledge;
- the scope of social practice;
- academic discipline.

Obviously, the area of intersection of scientific interests for these areas of knowledge is an adult. The main function of andragogy, in accordance with the meaning of its name, is to lead an adult. And for this you need to know the nature and characteristics of the one you are leading. The close interaction of andragogy with other areas of scientific knowledge and practice, in the late 60s of the XX century, was determined by the famous Russian psychologist B. G. Ananiev as human knowledge.

Basic principles of andragogy

The main position of andragogy, in contrast to traditional pedagogy, is that the leading role in the learning process is played not by the teacher, but by the student. The function of the teacher in this case is to assist the student in identifying, systematizing, formalizing the personal experience of the latter, correcting and replenishing his or her knowledge. In this case, there is a change in the priority of teaching methods. Andragogy mainly provides for practical exercises instead of lectures, often of an experimental nature, discussions, business games, cases, solving specific production tasks and problems. In addition, the approach to obtaining theoretical knowledge is changing. Disciplines containing integrated material in several related fields of knowledge (interdisciplinary disciplines), for example, project management, come to the force.

Modern science identifies the following basic principles of andragogy:

1. The principle of prioritization of independent learning. In order to use this principle practically considerable preliminary preparation is necessary – the

preparation of training programs, the selection and replication of educational material, the acquisition and creation of training computer programs. It is not enough to make a bibliography here. This principle provides an opportunity for an adult to slowly familiarize himself with educational materials, memorize terms, concepts, classifications, comprehend the processes and technologies for their implementation. A significant help in this is provided by modern distance learning.

2. The principle of joint activity of the student with classmates and the teacher in the preparation and in the learning process. The starting point of the learning process is to identify the needs of students and production needs. Trainer interviews), group discussions allow these needs to be identified.

3. The principle of using the existing positive life experience (primarily social and professional), practical knowledge, skills of the student as a learning base and a source of formalization of new knowledge. This principle is based on active teaching methods that stimulate the creative work of students. On the other hand, attention should also be paid to individual work – writing papers such as abstracts, cases (according to some given template), creating methodological schemes and descriptions, which can then be worked out to the enterprise standard.

4. The principle of correcting outdated experience and personal attitudes that impede the development of new knowledge. Both professional and social experience can be used, which conflicts with the requirements of the time, with corporate goals.

5. The principle of an individual approach to learning based on personal needs, taking into account the socio-psychological characteristics of the individual and the restrictions that are imposed by his activities, the availability of free time, financial resources, etc. The individual approach is based on the assessment of the student's personality, analysis of his professional activities, social status and the nature of relationships in the team. Preliminary interviews, questionnaires, testing allow you to build a socio-psychological portrait of the student.

6. The principle of elective education. It means giving the student the freedom to choose goals, content, forms, methods, sources, means, terms, time, place of learning, evaluation of learning outcomes.

7. The principle of reflectivity. This principle is based on the student's conscious attitude to learning, which, in turn, is the main part of the student's self-motivation.

8. The principle of demand for learning outcomes by the practical activities of the student. First of all, this is the demand for the knowledge, skills and abilities acquired by the student in the economic, production activities of the enterprise.

9. The principle of systematic training. It consists in the correspondence of the goals and content of training to its forms, methods, teaching aids and evaluation of results.

10. The principle of updating learning outcomes (their early use in practice). The implementation of this principle is ensured by the previous principles – consistency, practical demand for learning outcomes, individual approach, use of accumulated experience.

11. The principle of student development. Training should be aimed at improving the personality, creating abilities for self-learning, comprehending something new in the process of practical human activity.

In conclusion, it should be noted that as a science that cognizes and generalizes the practice of adult education, andragogy makes it possible to reasonably formulate and implement the educational goals of adults. Developing the theoretical and methodological foundations of activities that help to acquire general and professional knowledge, master the achievements of culture, form moral guidelines, andragogy considers education in the context of a person's life path.

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HYBRID LEACHING OF A FOREIGN LANGUAGE AT UNIVERSITY

Abstract. The article updates the issue of hybrid learning of foreign language for full-time Master students. Hybrid learning is considered by the author in comparison with distance and blended learning. The use of hybrid learning seems promising and allows making the educational process more effective.

Keywords: hybrid learning, online learning, blended learning, distance learning, face-to-face learning, information and communications technology (ICT), educational efficiency.

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ГИБРИДНОЕ ОБУЧЕНИЕ ИНОСТРАННОМУ ЯЗЫКУ В ВУЗЕ

Аннотация. В статье актуализируется вопрос гибридного обучения иностранному языку магистрантов очной формы обучения. Гибридное обучение рассматривается автором в сравнении с дистанционным и смешанным обучением. Использование гибридного обучения представляется перспективным и позволяет сделать образовательный процесс более эффективным.

Ключевые слова: гибридное обучение, онлайн обучение, смешанное обучение, дистанционное обучение, очное обучение, ИКТ, эффективность образовательного процесса.

Recently, the concept of hybrid learning has been used in relation to modern ways of learning with information and communications technology (ICT). After switching to distance learning caused by the pandemic and the need to continue learning with the help of ICT, it became obvious that it is impossible to return to the traditional model of learning completely. At present, many have noted that universities have developed a special hybrid format of learning that combines both elements of online and face-to-face learning. In practice, during such classes, some

students and/or the teacher work remotely, while some participants of the learning process are in the classroom [1].

At the present time there is a global tendency to use hybrid learning technology in higher education, as the use of only distance learning is unacceptable for many reasons [2; 77]. In Russia traditional education is still highly valued and distance learning is not trusted very much. However, the realities of ourlife are such that many undergraduates combine work and study. Students cannot attend every class in person, but they can connect from home, study online materials on their own, and be active participants in the process. The world practice shows that hybrid learning can be a way out of this situation [2; 77].

Researchers believe that hybrid learning is “a new type of interaction between teachers and students”, which is becoming more and more attractive and accessible in today's rapid development of technology and involves a different way of teaching and learning [2; 78]. At the same time, hybrid learning should not be mixed with distance learning, as the latter implies “temporary and territorial remoteness of the teacher and the student”, which has its own drawbacks: lack of live communication with the teacher, untimely communication with him/her [2; 77]. However, distance learning is in demand primarily for correspondence students.

Compared to distance learning, hybrid learning is a kind of e-learning, which allows “use of ICTs and to keep up with the times” [2; 77]. [2; 77], “complements traditional learning and allows you to increase not only the productivity of the educational process, but also its quality” [2; 78-79]. Thus, hybrid learning is not an alternative to traditional education and is not equivalent to distance learning.

In the scientific literature hybrid learning is often called “blended learning” [2; 77], [3; 62]. Foreign literature uses the terms “blended learning”, “hybrid learning”, “distance learning”, “open learning”, “e-learning” in relation to e-learning, but their use is not clearly defined. What is the difference between the terms “blended learning” and “hybrid learning”? In the broad sense, both in English and Russian literature, hybrid learning is any combination of contact (face-to-face, in-person) teaching and online learning, i.e. a combination of synchronous and asynchronous learning formats [3; 62].

D. P. Ananin, N. G. Strikun give a narrower understanding of hybrid learning as “a combination of contact classroom and synchronous distance learning, the so-called synchronous learning in a virtual environment (virtual synchronous) [3; 62]. Synchronous interaction, which creates the possibility of combined learning directly, i.e. in the interaction with other participants of educational events, or indirectly - by means of communication (technology) – began to be positioned as the main feature of hybrid learning [3; 62].

S. A. Gryaznov points out that it is worth making a clear distinction between the concepts of “blended” and “hybrid” learning, as blended learning combines face-to-face format with asynchronous elements, and hybrid involves a combination of face-to-face and distance elements [1].

Blended learning, as defined by Graham C.R. in 2006, is “a blended learning system that combines face-to-face learning with computer-based learning” [4; 249]. Thus, blended learning is understood as a combination of online and face-to-face

learning, i.e. the use of online educational resources, teacher-student interaction via the Internet with the obligatory condition of traditional teacher-student interaction in the classroom with the use of classical teaching methods [4; 251]. One should not confuse blended learning with blended online learning, in which the teacher uses different ICTs for learning and interaction, with the whole course taking place virtually, students never meet in person, all course content and all assignments are completed online, communication between participants takes place only online.

Blended learning involves mastering and using a combination of one or more of the blended learning models in the classroom: Station Rotation, Lab Rotation, Individual Rotation, Flipped Classroom, Flex, A la Carte, Enriched Virtual [5], which allows a significant variety of activities in foreign language classes, increasing student outcomes, motivation and personalization. However, it is important to consider that adding an online component to traditional instruction is not, in and of itself, effective blended learning: "It is the change in pedagogical approach, and the resulting change in the structure of the learning process and student engagement in new learning strategies, that distinguishes effective blended learning from the use of technology in education"[6; 10].

According to some authors, only the availability of ICT as a possible tool is an insufficient condition for the implementation of the hybrid form. For its full-fledged realization it is necessary to organize the educational process in such a way that 40-80 % are realized online, or in digital mode. In contrast to the blended learning, in which up to 40-45 % of online work, the hybrid form implies a combination of educational technologies, regardless of whether they are implemented offline or online [7].

Master's students of the Higher School of Technology and Energy of St. Petersburg State University of Industrial Technologies and Design have problems with regular attendance of face-to-face classes. However, in order to actively engage in scientific activities, participate in international conferences, make reports in English they are required to have a high level of English language proficiency. When conducting English classes in the classroom, the instructor is not required to record the class in video format and make it available for asynchronous watching, to broadcast the class synchronously, or to post all materials to an educational platform. However, in order to support the interaction with the group, the most responsible teachers are forced to do all of this, thereby placing the burden of additional hours of computer time on themselves.

As a result, there is a significant change in the role of the teacher, it becomes more regulatory and organizational. The main part of the teaching time is devoted to independent study. The main tasks of the teacher are to involve students in the educational process, to provide all necessary information and materials, to teach how to find and retrieve the necessary information in a foreign language and to form the ability to independently improve the level of language competence [8].

Given the modernization of education, its informatization and digitalization, many scientists see the solution to effective training of quality professional staff in the rational combination of traditional educational technologies with modern information and communication technologies, one of the promising areas of which at

the present stage is currently hybrid learning. Undoubtedly, the decision to implement hybrid learning should take place not only on the basis of the student's choice, but also at the level of university administration, educational program, taking into account various constraints and the willingness of the teacher himself.

In modern conditions, when many most advanced companies consider hybrid learning as a technology of the future [3; 68], focus on synchronous hybrid class for students in the classroom and distance students participating in the class in real time, offer the student to choose the participation format independently, including asynchronous format [3; 68], the demand for this learning is only increasing. The use of hybrid model of learning affects the competitiveness of the university, as it gives students more extensive and flexible learning opportunities, while requiring from the teacher special training, readiness of all participants to a new type of interaction, special organization of learning, teaching and assessment.

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MOODLE AS A TOOL OF IMPLEMENTING BLENDED LEARNING WHEN TEACHING ENGLISH TO MASTER'S STUDENTS

Abstract. The article discusses prerequisites for blended learning when teaching a foreign language to Mater's students. The potential of using Moodle LMS for this purpose is analyzed. The author provides examples of various activities implemented via Moodle, aimed at developing universal competencies UC-4 and UC-5.

Keywords: blended learning, English for specific purposes, Moodle LMS, universal competencies, teaching technologies, Master's programme.

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ПЛАТФОРМА MOODLE КАК ИНСТРУМЕНТ РЕАЛИЗАЦИИ СМЕШАННОГО ОБУЧЕНИЯ ПРИ ПРЕПОДАВАНИИ АНГЛИЙСКОГО ЯЗЫКА В МАГИСТРАТУРЕ

Аннотация. В статье рассматриваются предпосылки для использования смешанного формата обучения при преподавании иностранного языка в магистратуре. Анализируется потенциал системы Moodle для реализации подобного формата. Приводятся варианты работы в Moodle, направленные на развитие универсальных компетенций УК-4 и УК-5.

Ключевые слова: смешанное обучение, английский язык в профессиональной деятельности, система управления обучением Moodle, универсальные компетенции, образовательные технологии, магистратура.

The rapid development of information technologies, which provide for easier Internet access and ubiquitous use of communication devices, the emergence of multiple online learning platforms and the COVID-19 pandemic, which accelerated general acceptance of the concept of online learning and revealed its advantages are the factors, which have accelerated the transformational processes in the present-day

educational environment.

The modern trend towards the personalization and digitization of education caters for:

- every student's achieving educational results, necessary for living in a digital society;
- the development of digital educational environment;
- transition to new modes of teaching using digital educational environment, e-learning and blended learning [1].

Blended learning, which is defined as "a particular learning and teaching environment, that combines face-to-face and online learning experience" [2], seems to offer a compromise between the traditional and e-learning.

Although there are studies aimed at working out a perfect classification, based on the proportion of face-to-face and online learning, as well as a variety of terms used to characterize these proportions (such as web-enhanced, hybrid, blended language learning courses, and face-to-face language learning courses with additional online materials, etc.) [3], we share the view of Claire Whittaker who argues that these terms have a similar meaning, and the term "blended learning" is applicable to any combination of face-to-face learning and computer technologies.

To understand why blended learning is a necessity when teaching English for specific purposes to Master's students, we should consider the peculiarities of the course.

The discipline "Foreign Language for Specific Purposes" is studied during two semesters, for two academic hours a week, and covers a wide range of activities necessary to provide for the development of universal competencies UC-4 and UC-5 (we will focus on them later). These activities include the revision and study of grammar and vocabulary, work with research literature and terminology, discussions, role-plays, academic and business writing, the study of business ethics and more. In addition, the number of Master's students who cannot attend every class in person on a regular basis is growing. Taking into consideration the time limits and the scope of the material to be mastered, the necessity to optimize the educational process is quite obvious. The solutions that seems to offer itself, given the digital transformation of modern education, is blended learning.

Blended learning is a promising approach when studying and teaching English for Specific Purposes for the following reasons:

- a wider variety of teaching technologies;
- greater flexibility of the teaching process;
- accessibility of information and ease of revision;
- better efficiency of the educational process [1].

Ideally, blended technology complements (not replaces) the lecturer's work. What to include in the blend is determined by the tasks and objectives of the course as well as limitations of the educational environment.

The tasks of the course of "Foreign Language for Specific Purposes" are set in the academic course working programme and may be generally reduced to

development of universal competencies UC-4 and UC-5 [4]. We would like to consider these competencies in more detail.

Universal Competency 4 (UC-4), also known as communicative competency, implies that the Master's student is capable of using modern communication technologies, including those in a foreign language, for academic and professional interaction, knows the rules of business and professional ethics, the difference between formal and informal communication styles, grammatical constructions and clichés necessary to request and transmit information for business purposes; the student is supposed to be able to logically formulate and maintain their position in business negotiations, communicate with foreign partners, extract the relevant information from business and professional texts and have correspondence and professional communication skills, including the use of information extracted from foreign sources.

The activities aimed at developing UC-4 include grammar tests and exercises, analysis of research literature in English, writing summaries and abstracts, compiling glossaries, creating dialogues, writing business letters, CVs, cover letters, business role-plays, making presentations in English, etc.

Universal Competency 5 (UC-5) also known as cross-cultural competency, implies the student's ability to take into account the diversity of cultures during intercultural interaction, it means that the students is supposed to know the peculiarities of intercultural communication, is able to use the knowledge of the characteristics of business culture and traditions of the countries of the studied language within the framework of international cooperation and has the skills necessary to communicate with foreign partners based on the fundamentals of business communication and business etiquette in the countries of the studied language.

The list of possible activities for activating UC-5 includes case studies, listening comprehension, role-plays, essays, etc.

Some of these activities can be successfully relocated online; moreover, this relocation will not only save time and resources, but also add variety to the educational process.

For the digital learning environment to be efficient, it has to be redundant, non-linear, adaptable and open. Educational resources are to be variable both in form and content, the same material being represented in different modes (as a text, audio or video) to provide for its better comprehension. Various communication forms between the subjects of education should be provided for, the educational content ought to be easy to interact with as well [1].

Moodle (Modular Object-oriented Dynamic Learning Environment) is one of the most available and user-friendly systems which complies with the aforementioned requirements. It provides integrated support for six different activities: creation, organization, delivery, communication, collaboration and assessment [5]. In addition, the courses once created are reusable.

Being rather flexible, Moodle makes it possible to include a wide range of elements and resources into the educational course.

These elements can be classified as static features whose content students can only read, (re)view or collate with, interactive features which make it possible for the students to interact with the teacher and the system, and social features which put an emphasis on student-to-student interaction [6]. These features are presented in Table.

Table – Classification of Moodle features

Static elements	Interactive elements	Social elements
web pages, text pages, links, labels	assignments, online journals, quizzes (tests), surveys, databases,	chats, forums, glossaries, wikis, blogs, peer-assessment workshops, messaging

It should be emphasized, that even the inclusion of basic features into the Moodle course, such as text pages, web pages, assignments, quizzes and glossaries can make the difference.

Our strategy has been to create an online backup of the face-to-face course, with every topic corresponding to a separate class, so that all Master's students could follow the educational process irrespective of their ability to attend face-to-face classes.

We would like to consider the major elements used in the Moodle course and their purpose.

The *file* element is self-explanatory, as it makes it possible to present materials to students such as word-processed documents or presentations (books, research articles, PPT presentations, images, etc.)

A *URL* is a link to a website or online file. It is a convenient tool for providing students with web links for research. In case of Master's students, these can be links to YouTube educational videos, research and business articles, educational websites, etc. We use URL mainly for adding links to videos, as we consider them a multi-purpose tool for developing a wide range of skills starting form listening comprehension and extracting and analyzing relevant information to business communication and inter-cultural skills.

A *page* is a rather straightforward resource, apart from plain text, it can include images, audios, videos, embedded code or their combination. We use pages for posting theoretical material (grammar) studied in the class, as well as for listening comprehension tasks, when in it necessary to incorporate an audio file into the text.

A *glossary* is an invaluable resource when working with research articles. It can be created by the teacher, or compiled in collaboration with the students. The entries of the glossary can be put in categories, making it an excellent tool for working with terminology.

An *assignment* provides a space into which students can submit work for teachers to assess and give feedback on. In case of Master's students, assignments can be used for the assessment of multiple writing tasks, such as article summaries, essays, business letters, abstracts, CVs, cover letters, PPT presentations, etc.

Quizzes can be used in or outside of the class for testing anything from grammar and vocabulary to academic and business skills. The automatic monitoring

of the results, flexible settings and reusability are additional advantages of this element [7].

Definitely, our analysis would be incomplete without mentioning barriers to the use of Moodle and blended learning in general, these being:

- possibly inconvenient interface;
- difficulty finding a necessary resource;
- problems with stable Internet access and advanced training of teaching staff;
- inadequate technical facilities.

We believe these problems are surmountable, given the potential of this mode. In fact, the implementation of blended learning is inevitable when teaching a foreign language at universities, especially to Master's students, and courses have to be specially developed to use the elements of Moodle to best advantage in order to combine the finest aspects of classroom teaching and online learning.

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PECULIARITIES OF ONLINE TEACHING

Abstract. The article discusses the types of online education and analyses the advantages and disadvantages of each kinds of educational formats. The example of learning foreign languages, namely English, and teaching foreign languages online is given, which is based on the author's personal experience.

Keywords: online education, educational technologies, online teaching.

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ОСОБЕННОСТИ ПРЕПОДАВАНИЯ ОНЛАЙН

Аннотация. В статье рассматриваются типы онлайн-образования и анализируются преимущества и недостатки каждого из видов образовательных форматов. Приводится пример обучения иностранным языкам, а именно английскому языку, в формате онлайн, основанный на личном опыте автора.

Ключевые слова: онлайн-образование, образовательные технологии, преподавание онлайн.

There are several factors, both technological and social, which made online education an integral part of modern life. The development of information technologies, easier Internet access and the COVID-19 pandemic can be listed among the factors which accelerated the faster development of the industry of online education. The use of different communication devices, such as educational applications (Duolingo etc.) [1] or online learning platforms (Progress me etc.) [2], make online education available and efficient. Up-to-date educational environment is presented in three different formats: traditional – offline, new one – online (face-to-face online learning mode or learning by watching educational video footage or learning by reading text-only-format) and blended.

As the example of online teaching we will consider the personal experience as an online teacher of both SkyEng online school and an online tutor of English.

It won't be an exaggeration if we assume that nowadays every person has had an experience of online education. Why do people choose the online format? It saves time and energy which can be spent on getting to the place of classes. It is the most cogent argument for online education. The second important thing is availability. People have the opportunity to learn everything they want remotely. Why do people hesitate to choose online education? They doubt in the quality of such format of learning. Most people, especially the representatives of "old school" mainly appreciate offline face to face type of learning. They believe that the high quality education can be provided only by offline learning. It makes sense. Being offline in one place with teacher students can ask questions and teachers have the opportunity to get a feedback on the lecture delivered and topics they discussed. Tastes differ. Albeit the fact that the majority of people prefer offline to online format of education. The online education is expanding its range of influence. Transition to online life style has already been launched.

The present article focuses on discussion of face to face online teaching, which is supposed to be more efficient than teaching via pre-recorded video lessons or text-only-format. The latter one requires more efforts and diligence from students and won't guarantee the completion of the course by a student if there are no assessment stages to control the progress. The same is partially about learning by watching educational video footage. Even if there is homework to do and practice to complete this format of studying can't also give the full progress and true results and goals achieved. The author of present article double-jobs as a university senior lecturer and an online tutor of English at SkyEng [3] online school. SkyEng school has its own online platform (vimbox) which provides for face to face video and audio communication during the lesson. The platform is filled with modern teaching content based on up-to-date methodology of teaching foreign languages. Such content gives broad perspectives for improving all kinds of skills – grammar, writing, reading, but mostly – speaking and listening ones. The results of education depend on teacher's experience and teaching methods and all the materials on the platform collected by methodologists help both parts – teachers to lead their students to their goals by efficient teaching methods and students – to improve speaking skills by learning.

The process of face to face online learning and teaching format is accompanied by psychological and technical peculiarities. They are interdependent. Technical problems during the lesson may lead to psychological unsatisfaction of both participants (teacher and student) and at the first lessons with a new student some psychological moments can lead to misunderstanding between teacher and student. All of these factors undoubtedly affect the results of educational process. Everything matters in online educational process: teacher's personality (friendliness, the ability to create comfortable atmosphere at the lesson etc.) and even voice which can become the obstacle if student doesn't like the teacher's voice. All details are important and should be paid attention to. To be more precise we may mention several cases from the article author's teaching practice.

Psychological peculiarities

The first one is about the novice *online teacher's psychological state*. It is

known that most of people don't like listening to their own voice in record, and even sometimes don't recognize their voice as their own one. It's due to human's physiological specifics. There are also people who can't accept themselves in video records. That's why new online teachers might be shy and also worried, meeting a new student and having the first lesson for a new person is usually stressful, because teacher is responsible not only for the quality of the lessons but for the clients of online school. The aim of school is to have more students and more profits. These thoughts are kept in teacher's mind which adds extra stress.

The second thing which is also important is *student's psychological state*. Students may feel uncomfortable, shy and speechless because of abovementioned factors, the lack of knowledge and confidence in language skills and a new unusual form of education. All drawbacks can be eliminated in offline learning process. Such non-verbal means of communication as a body language, facial expression, the energy of the person and the warmness of actual face to face communication always wins in comparison to remote communication via PC or laptop screen. It's easier for teachers to create more comfortable environment when the participants of educational process are sitting face to face offline. It is widely known that the process of learning foreign languages is more efficient when there is a comfortable relationship between teacher and student.

As practice showed students who are women are pickier in choosing online teachers and their requirements are rather high. They won't wait for uncomfortable situation to come. They may directly say what they like or don't like in the course or teacher's teaching methods and attitude to educational process. Teaching children of primary school or teenagers is one of challenging tasks. Students of early ages may sometimes worry badly and even cry if they make mistakes during the lesson. It's the hardest thing especially when student is in Moscow and teacher is in Saint Petersburg. The teacher doesn't have the opportunity to calm the student down. If it is offline lesson it will be much better and easier for teachers to avoid such unusual situations.

Technical peculiarities

Technical peculiarities are essential part of online education. There will not be a progress in studying foreign languages if there are such technical problems as bad connection due to slow Internet speed, audio or visual disturbances. The quality of means of communication is number one thing that should be worked on if someone wants to teach online. Modern linguistic platforms are comfortable for using [2, 3]. A big team of IT specialists are working on a daily basis to improve the platforms' technical possibilities eliminating emerging problems simultaneously.

As for universities the blended or hybrid kind of education is the best option. For example, professors or senior lecturers can create pre-recorded video lessons, which can be shared further with their full time, extramural or part time students for better understanding of studied topic. Luckily, there is a fully equipped studio for recording video lectures in Higher School of Technology and Energy of Saint Petersburg State University of Industrial Technologies and Design. Teachers of schools, colleges and universities will use extensively not only platforms and apps in their teaching process, but also Artificial Intelligence in the nearest future. All aids

and ways of improving teaching process should be considered by every teacher as the opportunity to lead students to their goals successfully. In this way our country, the Russian Federation, will have well educated generation of professionals, who will make good changes both for our country and the whole world.

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REDUCTION OF NITROGEN OXIDE EMISSIONS FROM FOSSIL FUEL COMBUSTION

Abstract. This paper discusses the mechanism of nitrogen oxides formation from fossil fuels combustion, the main factors affecting the intensity of their formation, as well as the ways to reduce them.

Keywords: nitrogen oxides, formation mechanism, reduction methods, flue gas recirculation, non-stoichiometric combustion, air staged combustion, low-NOx burner.

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СНИЖЕНИЕ ВЫБРОСОВ ОКСИДОВ АЗОТА ПРИ СЖИГАНИИ ОРГАНИЧЕСКОГО ТОПЛИВА

Аннотация. В данной работе рассматривается механизм образования оксидов азота при сжигании органического топлива, основные факторы, влияющие на интенсивность их образования, а также способы их снижения.

Ключевые слова: оксиды азота, механизм образования, способы снижения, рециркуляция дымовых газов, нестехиометрическое сжигание, ступенчатое сжигание, горелка.

Thermal power plants and boiler houses, where the large quantities of solid, liquid and gaseous fuels are burning, emit different combustion products into the atmosphere that pollute the environment.

All toxic substances are divided into four hazard classes: from slightly hazardous (to which, for example, carbon monoxide CO belongs) to extremely hazardous. The most toxic emissions from thermal power plants are sulfur oxides SO_2 and SO_3 and especially nitrogen oxides NOx (mostly NO and NO_2).

Based on the studies in Russia, the following maximum permissible concentrations (MPC) of harmful substances in the atmospheric air have been established: for CO, SO_2 and NO_2, respectively, are 5000, 500 and 85 μg/m^3.

Along with the existing MPC system, a system for limiting absolute emissions, or specific emissions (per unit of heat or electricity) has been developed and introduced by law. MPE (Maximum Permissible Emissions) norms allow not only to deal more effectively with the increase in absolute emissions, but also to more clearly assess the responsibility of each enterprise for air pollution.

Even when burning an environmentally friendly fuel such as natural gas, NOx emissions usually exceed the allowable concentration.

At elevated concentrations, nitrogen oxides have a pronounced toxic and irritating effect on a living organism, leading to pneumonia, bronchitis, cancer, and sometimes death. In addition, nitrogen oxides also have a detrimental effect on the environment, wildlife and vegetation. Therefore, reducing their emissions during fuel combustion is the main environmental task of designers and technologists of fuel-combustion plants.

The sources of nitrogen oxide formation during combustion can be nitrogen-containing fuel components and molecular nitrogen in the air, which is used as an oxidizer for combustion. Therefore, nitrogen oxides are usually divided into **fuel-** and **air-NOx**[1]. It is obvious that when gas is burned, only air nitrogen oxides are formed, since natural gas does not contain nitrogen-containing components.

Air-NOx, in turn, are divided into **thermal**, which are formed at high temperatures due to the oxidation of molecular nitrogen by atomic oxygen (this mechanism has been studied and proposed by academician Zeldovich), and **"fast"**, formed in the zone of relatively low temperatures ("fast" they are named because the rate of their formation is high).

There are two fundamentally different approaches to the problem of reducing nitrogen oxide emissions: **passive** and **active** [2]:

- **Passive method** – flue gas cleaning is carried out in special installations mounted behind the boiler in the area after the last heat-receiving surface in front of the chimney.
- **Active method** – is to suppress the formation of NOx at the initial stage, i.e. in the flame formation zone.

A comparative evaluation of the efficiency and economy of the two approaches to solving this problem clearly shows the feasibility of choosing an active way to reduce NOx, i.e. creating conditions that are unfavorable for the formation of nitrogen oxides and, at the same time, favorable for ignition and complete combustion of the fuel.

Obviously, the main parameters that have a primary effect on the rate and intensity of NOx formation are: **temperature** and **oxidant content** in the initial section of the flame formation, i. e. in the near-burner area.

Temperature reduction can be achieved by:

- flue gas recirculation;
- injection of moisture;
- reducing the temperature of hot air;

– sectioning the furnace with two-light screens;
– the use of low-temperature combustion methods.
– The **decrease** of the **oxidant concentration** is carried out using:
– non-stoichiometric combustion;
– staged combustion;
– burners with prolonged mixture formation;
– high temperature NOx reduction.

The most accepted way to reduce the **temperature** in the zone of active combustion is flue gas recirculation. When gas is burned, there are no fuel oxides of nitrogen that are weakly dependent on temperature, that's why the efficiency of gas recirculation is very high. The place of recirculation gases entry (into the slots between the burners, into the secondary air duct, under the burners, etc.) and the amount of recirculation gases (typically 5 to 20 %) is determined selectively on a case-by-case basis.

The simplest way to reduce the **oxygen content** in the flame is to reduce the excess air in the burners. This reduces the loss of heat with flue gases and the consumption of electricity for own needs. The limited application of this method is explained by the fact that when a certain critical value of excess air is reached, which depends on the type of fuel, the method of combustion, the design of the furnace and burner, products of chemical under burning, and sometimes carcinogenic benzo(a)pyrene $C_{20}H_{12}$, are formed.

With stackedarrangement of burners, **non-stoichiometric** combustion can be an effective way to reduce nitrogen oxide emissions, which is organized due to the fuel-air imbalance in burners: covering individual air dampers (**air imbalance**) or fuel valves (**fuel imbalance**) in front of individual burners. Moreover, in both cases, the afterburning of the fuel occurs with traditional excess air after mixing the combustion products from the oxidizing and reducing zones. **Combined imbalance** is also possible.

A variation of non-stoichiometric combustion is the **staged combustion** method, when only part of the air is supplied through the main burners, and the rest of the air necessary for complete combustion of the fuel is supplied further along the flame height through special nozzles.

One of the promising directions in the field ofnitrogen oxides reduction is considered to be the use of special designs of burners that provide inhibition of the process of NOx formation.

The use of special so called low-NOx burners makes it possible to carry out at a relatively low cost (it is known that the cost of burners does not exceed 2 % of the total cost of the boiler) a set of technical solutions that slow down the process of formation of nitrogen oxides and intensify reduction reactions, as a result of which a noticeable reduction in emissions of nitrogen oxides can be achieved.

To reduce the formation of nitrogen oxides (provided that the normal operation of the boiler is maintained), the design of the burner has to [3]:

– slow down the admixture of oxygen-rich secondary air to the ignited fuel-primary air mixture;

– intensify heat and mass transfer between the air mixture jet and high-temperature flue gases containing little oxygen, as well as between secondary air and flue gases;
– ensure efficient fuel combustion with the lowest possible proportion of primary air;
– reduce peak temperatures in the zone of active combustion without compromising ignition stability and fuel burnup efficiency.

The choice of **NOx reduction method** is determined by:

– the required degree of reduction of NOx emissions (taking into account the allowable costs and time during which the boiler can be taken out of operation, if we are talking about the reconstruction of existing equipment);
– the operational consequences that the operating personnel will have to face after the implementation of one or another method of NOx reduction;
– any modernization should ensure the reliability of the combustion process, i.e. stability of ignition in the entire range of boiler loads;
– the introduction of technological methods should not impose restrictions on the fuels burned in boilers before their modernization;
– the degree of fuel underburning must remain within acceptable limits;
– reduction of NOx emissions should not be accompanied by a significant increase in emissions of other toxic pollutants.

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DISTRIBUTION OF THE MASS OF THE THREAD ALONG THE AXIS OF ROTATION OF THE PACKING WHEN WINDING

Abstract. The article considers the packing density, which depends on many factors, solves the problem of uniform density along the packing axis when winding.

Keywords: packing, packing density, winding angle.

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РАСПРЕДЕЛЕНИЕ МАССЫ НИТИ ВДОЛЬ ОСИ ВРАЩЕНИЯ ПАКОВКИ ПРИ НАМАТЫВАНИИ

Аннотация. В статье рассматривается плотность паковки, которая зависит от многих факторов, решается проблема равномерной плотности вдоль оси паковки при наматывании.

Ключевые слова: паковка, плотности паковки, угол наматывания.

When winding filamentous material into packs of various shapes (cylindrical, conical, two- and three-cone, etc.) of cross winding, zones with increased thread content appear at the edges of the packing. This circumstance is caused by a decrease in the winding angle to 0 in these zones. As a result, a so-called "lip" is formed here, that is, a local thickening of the packing, and when a friction cylinder or a rolling roller is exposed to the packing, this "lip" can "roll", moving from an increased volume to a zone of increased density. In addition, the displacement of the threads in the axial direction (crushing of the packing) leads to the fact that the length of the packing increases slightly, with the movement of an excessive amount of thread into this part [1].

The packing density depends on many factors, the most important of which include the properties of the wound thread, the type of winding (winding, precision), the packing structure (cross, parallel), the winding angle, thread tension, the clamping force of the bobbin to the friction cylinder, etc. The structural and kinematic parameters of the thread-laying mechanism strongly affect the unevenness of the density packing, which occurs due to the uneven distribution of fiber over the volume of packing.

The law of motion of the threader and the distance from it to the line of the thread on the packing affect the distribution of the fiber along the packing axis; the ratio between the time of one double stroke of the threader and the time of one turn of the packing affects the appearance of a ribbon or bundle winding structure, i.e., the distribution of fiber over the surface of the packing. Its uneven distribution, both in the first and in the second case, leads to a deterioration in the quality of packing, which makes it difficult to carry out subsequent technological operations. In addition, uneven density leads to disruption of the winding process and deterioration of the quality of the resulting thread. So, for example, the threads located on the strongly compacted edges of the packing will be intensively worn by the friction cylinder.

There are two main tasks associated with the influence of the clamshell on the formation of packing. This is, firstly, the determination of the relationship between the law of motion of the threader and the shape of the resulting packing and, secondly, its effect on the density distribution inside the packing. The solution of these two tasks in full causes significant difficulties and has not been finally received at the moment. Both tasks are closely related, since with a known distribution of packing density, it is possible to determine its shape, and vice versa [2].

In practice, the most important thing is to determine the packing density, which in most cases is a cylinder. This is explained by the fact that the uneven distribution of the fiber in the packing with the friction method of winding (or with a frictionless rolling roller) does not affect the shape of the resulting packing to such a strong extent as when winding on a spindle, since due to contact with the friction cylinder "rolling" the packing, the areas on which there is more fiber are compacted in to a greater extent than the areas where the fibers are smaller. The forming part of the packing remains rectilinear, and the packing itself is a cylinder.

In this formulation, the problem of density distribution in a package can be solved quite accurately. Violation of the packing form, i.e. deviation from the cylindrical shape (the appearance of protrusions at the edges, bumps during bundle winding), is characterized in this case by the excess of the obtained density over the maximum permissible for this structure (cross, parallel), and the distribution of the fiber mass in its body, which is determined by the law of motion of the threader.

In the wound packing, three zones can be distinguished, differing in the structure of the winding (Figure).

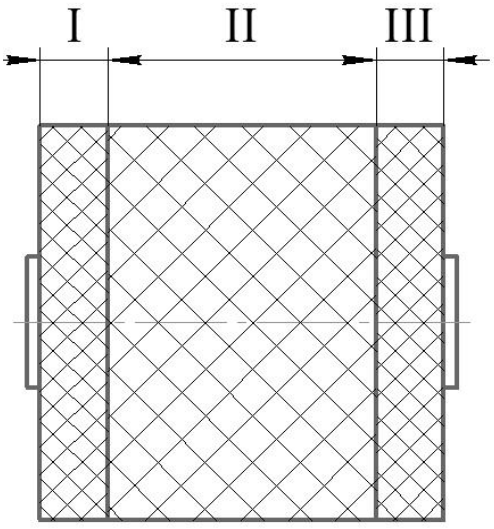

Figure. Structural winding zones

Zone II, located in the middle part of the packing, is characterized by a cross winding structure, and the winding angle of the thread β in this part of the packing practically does not change and is close to the nominal winding angle β_0. Zones I and III, located at the edges of the packing, are characterized by a transition of the structure from a cross at the borders with zone II to a parallel one at the edges of the packing, where the winding angle β varies from 0 to β_0.The packing density in zones I and III is increased compared to the density in zone II characterizes the uneven distribution of fiber in the packing in the axial direction.

To obtain a uniform density along the axis, it is not necessary that the winding angle remains constant. It is only necessary that during one double stroke of the threader, the same thread masses (or the same thread length) fall into the selected rings.

At a constant winding angle $\beta(x)_{пр} = \beta(x)_{обр} = \beta_0$ and $dm \sim 2 / \sin \beta_0 = const$

Thus, in order to obtain a uniform density along the packing axis, the following condition must be met:

$$\frac{1}{\sin \beta(x)_{пр}} + \frac{1}{\sin \beta(x)_{обр}} = \frac{2}{\sin \beta_0}$$

which must be observed for any x. If this condition is met for each turn of the thread, then the distribution of the thread along the packing axis will be uniform.

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THE MAIN DIRECTIONS OF THE STUDY OF TRANSIENTS IN ELECTRIC POWER SYSTEMS

Abstract. This article discusses the main areas of research on transients, and also provides an overview of the computational research apparatus.

Keywords: mechanization, automation, cybernetics, technological process, artificial intelligence, productivity, machine vision, optimization.

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ОСНОВНЫЕ НАПРАВЛЕНИЯ ИССЛЕДОВАНИЙ ПЕРЕХОДНЫХ ПРОЦЕССОВ В ЭЛЕКТРОЭНЕРГЕТИЧЕСКИХ СИСТЕМАХ

Аннотация. В данной статье рассматриваются основные направления исследований переходных процессов, а также проводится обзор расчетно-исследовательского аппарата.

Ключевые слова: переходные процессы, электроэнергетическая система, колебательная статическая устойчивость.

The causes of the imbalance in electric power systems are accidents and various operational operations, such as: changes in electrical loads, operational switching, regulation of various technological processes, starting mechanisms, etc.

Perturbations lead to changes in all or most of the parameters of the regime, whose deviations from the steady-state values may have different amplitudes and durations. This, in turn, causes the action of various automatic control and control devices.

The term "transients in the electric power system" covers a very wide set of various interrelated phenomena, which are characterized by: various causes of

occurrence, amplitudes of the most significant variables, frequencies of their changes, times of existence and, finally, consequences.

Transients distinguish:

- according to the power flow conditions (normal, emergency);
- for reasons of occurrence – by types of disturbing influences and values of disturbances (large, small, shock-like, sinusoidal, etc.);
- according to the assumptions made when composing differential equations, i.e. according to the completeness of the mathematical description;
- by the speed of the processes;
- according to the structure of the system under study (simple, containing radial lines, or complex, consisting of a number of contours).

The research directions of transient processes of electric power systems can be defined as follows:

- estimation of the amplitudes of variables under the most unfavorable emergency disturbances to determine the operating conditions of equipment, the choice of switching equipment, the development of measures to limit dangerous quantities or modes;
- determination of changes in the state variables of a nonlinear electromechanical system under finite perturbations to determine the stability reserves, the choice of the effects of the emergency control system;
- determination of stability indicators of a linearized model of electric power systems with small disturbances for the selection and coordination of tuning parameters of automatic control devices;
- clarification of the working conditions of new types of equipment, identification of factors caused by qualitative changes in the composition of electric power systems, justification of the mathematical models of elements used, determination of the directions of their refinement.

To solve the problems of analysis and synthesis within the framework of these areas, a computational and research apparatus has been formed for a long time, consisting, with rare exceptions, of a set of separate specialized programs.

Among them are:

1. Research programs for performing calculations of transients according to the complete Park-Gorev equations in schemes of small complexity. The main purpose is to determine the impact values of variables, as well as the development and refinement of models.

2. Programs and calculation methods for determining the amplitudes of periodic composing variables at given values of equivalent EMF synchronous machines. The main purpose is to perform mass calculations of short-circuit currents and complex-symmetric modes in circuits of arbitrary configuration for selecting equipment and tuning parameters of relay protections.

3. Programs for the study of electromechanical transients under finite perturbations. The main purpose is to determine the reserves of stability and emergency management measures that provide the necessary level of synchronous and resultant stability.

4. Software packages for the analysis of oscillatory static stability. The main purpose is to optimize the settings of automatic excitation regulators of synchronous machines, to coordinate the tuning parameters of various regulators in order to achieve satisfactory attenuation indicators of low-disturbed processes.

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COMPUTER MODELING OF A WOUND PRODUCT

Abstract. The results of computer modeling of a wound product created based on a bundle of flat sections passing through the winding axis and combined into a 3D model are presented. The modeling algorithm and methods for optimizing the 3D model are presented.

Keywords: 3D winding model, computer modeling, wound product, experimental sample.

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КОМПЬЮТЕРНОЕ МОДЕЛИРОВАНИЕ НАМОТОЧНОГО ИЗДЕЛИЯ

Аннотация. В статье представлены результаты компьютерного моделирования намоточного изделия, созданного на основе пучка плоских сечений, проходящих через ось паковки и объединенных в 3D-модель. Представлен алгоритм моделирования и методы оптимизации 3D-модели.

Ключевые слова: трехмерная модель намотки, компьютерное моделирование, намоточное изделие, экспериментальный образец.

The technology of manufacturing various products or blanks by winding is used in many industries. Traditional examples include the textile, light, engineering, electrical, and chemical fiber industries. The winding method has become widely used in the production of composite materials and products made of reinforced materials [1]. Winding is used to produce shells of various types and purposes: cylindrical tubes, high-pressure vessels and tanks, closed profiles of rectangular, triangular, elliptical sections, and conical shells [2]. One direction of studying the

properties of wound products is the development of their computer representation in the form of 3D models. This approach allows analyzing the internal structure of the winding at the stage of designing wound products, determining the optimal parameters of the winding process, solving optimization problems of the structure of windings to obtain the required physical and mechanical characteristics (strength, rigidity, permeability of the product). This article is devoted to the development of methods for obtaining a computer 3D model of a cylindrical wound product. The proposed methodology for obtaining a computer 3D model is based on a previously developed program for studying the patterns of winding structure formation based on 2D winding sections [3]. The proposed methodology for constructing a 3D model of the winding includes constructing a set of transverse sections of the wound product, sequentially connecting the thread turns in the body of the winding, and giving the thread turns volume using 3D modeling tools. Look at Figure 1. The mathematical findings are presented in the article "Process of Creating a 3D Model of a Wound Product" [4].

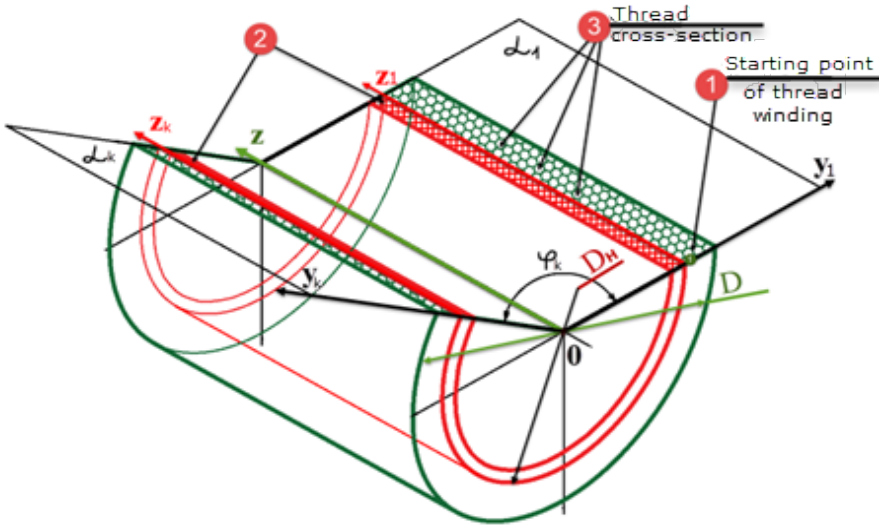

Figure 1. Calculation scheme of winding cross-sections with half-planes

The proposed methodology for synthesizing 2D section models of the package allows for analyzing the structural density of the package based on the arrangement of circle centers in the section. For example, in [5], an algorithm and program for calculating the degree of uneven distribution of threads in the body of the package are proposed based on the triangulation method.

Further construction of a computer 3D model of the wound product can be performed using CAD software packages that implement methods of 3D solid modeling, such as Autodesk Inventor, AutoCAD, and COMPAS 3D. Let us consider the construction of a computer 3D model of the wound product using the COMPAS 3D package.

To construct a computer 3D model of the wound product in the COMPAS 3D package, it is convenient to use the "Element Along Path" operation. This operation constructs a 3D solid element by moving the sketch of a section made in any plane along a specified trajectory. In this case, the previously obtained 3D spiral of the

centers of cross-sectional coils of thread in the body of the package can be specified as the trajectory. In this case, the movable sketch of the section along the trajectory is a circle with a diameter d located in the plane at the point with polar coordinates (0, θ, 0).

To construct the 3D spiral, an array of coordinate values of the centers of thread coils sections is used, calculated according to formulas (1)-(7) in accordance with the proposed algorithm. The specified array of coordinate values is calculated during the execution of the program developed in MATLAB [3] and is saved in an EXCEL format table file. To construct the 3D spiral in the COMPAS 3D package, the prepared array of point coordinates is read from the EXCEL file and then transformed into a spline. It should be noted that as a result of the calculations, an array of point coordinates of a sufficiently large volume is generated, which leads to significant time costs for data transformation into a spline. For example, in the COMPAS 3D package, the transformation of an array of 21,600 data points into a spline took about 60 minutes. An example of the result of transforming data into a spline for constructing a 3D spiral in the COMPAS 3D package is shown in Figure 2.

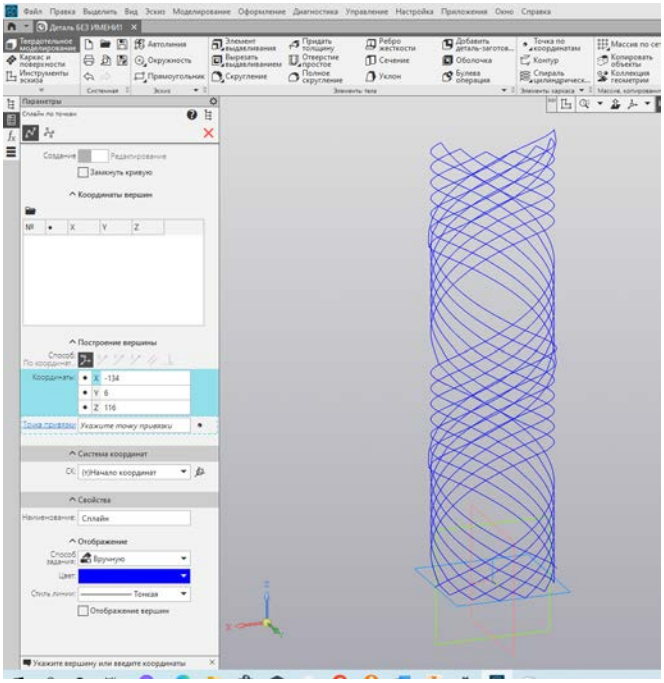

Figure 2. Constructing a 3D spiral in the KOMPAS 3D software

After creating a 3D spiral and a cross-section sketch of the thread in the form of a circle with diameter d in the selected plane using the "Element Along Path" operation in the KOMPAS-3D package, the thread is given volume along the trajectory of its turns, resulting in the construction of a computer 3D model of the winding. During the construction process, an error may occur in some cases called "surface self-intersection", caused by the sharp transition of the thread at the ends of the coil (see Figure 3). To eliminate this error, the diameter *d* of the thread can be reduced, for example. Figure 4 shows an enlarged fragment of the volume model of the winding, with the yellow color showing the cartridge, above which the thread sections are located. The diameter *d* is set for visualization purposes. The larger circles demonstrate the initially specified thread diameter.

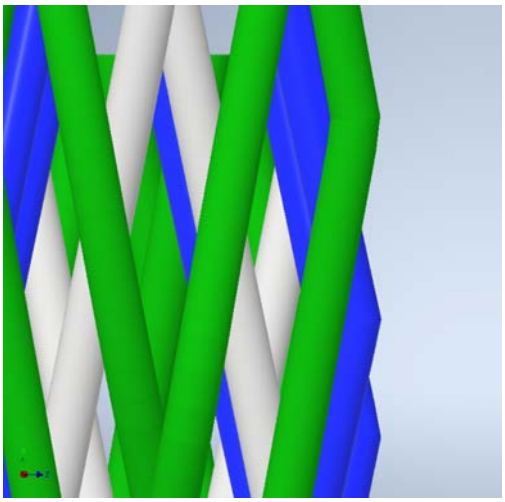

Figure 3.Threads at the ends of the coil

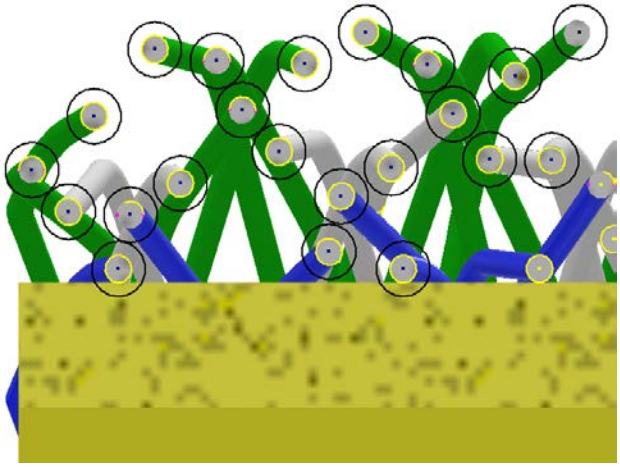

Figure 4. Magnified section of the coil in cross-section

Using the proposed methodology, a series of computer 3D models of cylindrical winding products were created. During the construction of 3D models, it was found that simultaneous generation of a large number of turns when creating a 3D spiral leads to significant time costs required to convert the data array into a spline and also to perform the "Element Along Path" operation. To reduce these costs, it is recommended to divide the array of original coordinate data points into several parts. After generating all parts, the computer 3D model of the winding can be obtained sequentially by using the "Combine" operation. When the distance between the centers of the sections forming the turns of the thread is small, the interpolation of the 3D spiral by spline can be replaced with linear interpolation.

Thus, the proposed methodology for developing computer 3D models of cylindrical winding products includes the following stages: creating a part file with a template, creating a 3D sketch of the thread turns (3D spiral) by importing coordinate points from an EXCEL file, creating auxiliary geometry, using the section plane of the winding passing through the axis of rotation and the starting point of the thread turns located perpendicular to the trajectory; constructing a circle with diameter d in

the created plane; obtaining a 3D model of the thread using the "Element Along Path" operation. If necessary to process a significant amount of data, these steps should be repeated.

As an example, Figure 5 shows the result of obtaining a computer 3D model of the winding for the following parameter values: B = 60 mm, , d = 0.5 mm, H = 20.65 mm, m = 120.

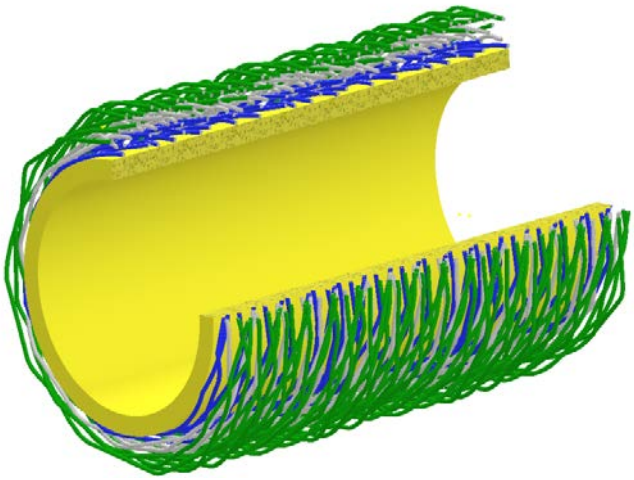

Figure 5. Computer 3D model of packaging

Conclusion. An algorithm, software, and methodology have been developed for creating computer 3D models of wound products using the capabilities of modern CAD software packages for solid-state modeling. The use of computer 3D models of wound products allows for analyzing the influence of winding parameters on the structure of the packaging. With the use of computer 3D models, it is possible to perform modeling of mechanical properties of products and analyze their elastic-strength properties in longitudinal and transverse directions [6].

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THE IMPACT OF DIGITALIZATION ON THE TRANSFORMATION OF THE LABOR MARKET IN DEVELOPED COUNTRIES

Abstract. The proliferation of the latest “4.0 technologies” is changing the workplace. Manual labor and routine tasks are being replaced by machine labor. Some professions are disappearing, new requirements for professional qualifications and knowledge are required. As a result of this development, there are concerns about public order in jobs and technological unemployment. The need for a labor force performing routine tasks is generally decreasing. Since routine work was distributed mainly among workers with medium qualifications and average wages (for example, accountants, clerical workers, production workers, etc.), the automation of such jobs led to a polarization of the labor market with a decrease in the share of workers with average wages and an increase in share of high-paid and low-paid workers.

Keywords*:* transformation, employment, labor market, digitalization, Industry 4.0, automation.

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ВЛИЯНИЕ ЦИФРОВИЗАЦИИ НА ТРАНСФОРМАЦИЮ РЫНКА ТРУДА В РАЗВИТЫХ СТРАНАХ

Аннотация. Распространение новейших «4.0-технологий» вносит изменения в трудовую сферу. Ручной труд и рутинные задачи заменяются машинным трудом. Некоторые профессии исчезают, на смену им приходят новые, требующие от работников высокой квалификации и знаний. В результате такого развития событий есть опасения по поводу массовой потери рабочих мест и технологической безработицы. Потребность в рабочей силе, выполняющей рутинные задачи, в целом, снижается. Так как рутинная работа была распространена в основном среди работников средней квалификации и средней заработной платы (например, бухгалтеры, канцелярские работники, производственные работники и др.), автоматизация таких рабочих мест привела к поляризации рынка труда с сокращением доли работников со средним уровнем заработной платы и ростом доли высокооплачиваемых и

низкооплачиваемых работников.

Ключевые слова: трансформация, занятость, рынок труда, цифровизация, Индустрия 4.0, автоматизация.

The power of new digital technologies is rapidly growing, which are being introduced into all areas of activity and changing our lives everywhere. The labor market is no exception. Today, there are serious transformational processes in this area.

The history of the development of computer technology shows that since 1945, computing power has increased by almost 50 % annually. This means that the costs of routine, computational operations have been reduced. Most tasks that follow well-defined rules could be automated based on algorithms. But the possibilities of automation should not be overestimated. As we can see, this does not mean a massive layoff of workers. Outdated professions are being replaced by new, progressive jobs. These processes are accompanied by constant training, retraining, advanced training in order to be in demand by specialists or at least stay afloat [1].

In his research, Arnts, using data from individual surveys, shows the possibilities of labor automation in developed countries (Table 1)

Table 1 – Opportunities for labor automation by country

A country	Share of employees with high potential automation, %
Korea	5,8
Finland	6,5
Belgium	7,0
Japan	7,2
Sweden	7,3
France	8,4
USA	9,0
Canada	9,2
Italy	9,8
Great Britain	10,1
Spain	11,5
Germany	12,1
Austria	12,2
Source: compiled by the author based on the source [2]	

As Table 1 shows, only 9 % of all U.S. workers work in automated jobs (i. e., jobs with an estimated automation potential of at least 70 %). For other countries, automation potential is found to vary from 6 % in South Korea to 12 % in Germany and Austria.

The degree of automation potential varies considerably by sector and country. Table 2 shows a number of sectors of the US economy, broken down by different categories of work.

Table 2 – The technical potential of automation in various sectors of the US economy

Sectors by type of activity	Auto-mation potential, %	Percentage of work time that can be automated by task type, %					
		Cont-rol	Exper-tise	Working in a changing environ-ment	Data collec-tion	Data processing	Work in a perma-nent environment
Hospitality and catering	73	30	35	10	70	90	90
Production	60	15	25	40	75	60	95
Transport and storage	60	30	40	45	75	85	65
Agriculture	57	10	35	50	85	70	80
Trade	53	10	45	35	70	75	95
Construction	47	10	25	50	70	65	90
Financial and insurance activities	43	10	25	11	60	85	93
Source: compiled by the author based on the source [3]							

The data in Table 2 show that almost a fifth of the time spent in the US workplace is associated with predictable physical activity and is predominant in industries such as manufacturing and retail. Accordingly, these sectors have a relatively high technical potential for automation using modern technologies.

In his research, M. Arnz builds a five-year forecast regarding the impact of Industry 4.0 on employment. The constructed model includes the following mechanisms:

– substitution and complementarity – technologies replace some workers and complement others;

– demand for products – investments in new technologies increase the competitiveness of companies, which reduces prices and increases production and, as a result, increases the demand for labor and employment. In general, this means that the economy can produce more and becomes richer, consumption, production and employment increase;

– labor supply – changes in labor demand affect unemployment, which stimulates the mobility of workers from shrinking segments of the labor market to growing segments of the labor market.

Increasing the mobility of workers, for example through training and skills development, can guarantee the positive effects of technological change, as well as provide high-paying jobs.

The growth potential of the economy due to new technologies is highly dependent on the availability of skilled workers. Appropriate educational policy helps to ensure the training of demanded skills both in schools and in the field of vocational and university education [4].

Thus, in the future, the labor market will demand workers with creative abilities, whose activities are related to science, development, artificial intelligence, Internet services, etc.

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SUSTAINABLE PRODUCTION AND CONSUMPTION AS A TOOL FORSUSTAINABLE REGIONALDEVELOPMENT

Abstract. The report briefly analyzes the history of the greening of production in Russia in the XX-XXI centuries. The prospects for greening production in the face of modern global challenges are considered.

Keywords: greening, production, sustainable development.

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УСТОЙЧИВОЕ ПРОИЗВОДСТВО И ПОТРЕБЛЕНИЕ КАК ИНСТРУМЕНТ УСТОЙЧИВОГО РЕГИОНАЛЬНОГО РАЗВИТИЯ

Аннотация. В статье кратко анализируется история экологизации производства в России XX-XXI веков. Рассматриваются перспективы экологизации производства в условиях современных глобальных вызовов.

Ключевые слова: экологизация, производство, устойчивое развитие.

The scientific problem of greening production is quite young on a historical scale. We can talk about serious scientific works on this issue since the beginning of the 20th century (D.N. Anuchin [2], V. I. Vernadsky [3], E. Leroy [1], P. de Chardin [7]). However, a massive surge in the number of scientific studies related to the greening of production occurred only after the UN Conference on the Human Environment, held on June 5–16, 1972 in Stockholm [5]. Thus, the stage of serious

concern and decision-making on the greening of production has been going on for 50 years.

In Russia during this time, two large waves of greening of production can be distinguished:

– Greening 1.0 (1960s-1980s).

Throughout the history of the Soviet Union, environmental protection was not one of the priority goals of the governing authorities – nature was perceived as a source of numerous resources, so the attitude towards the environment was predominantly utilitarian. At the same time, such a task was voiced at a high level: “Building the material and technical base of communism involves the creation of such a material basis that would allow us to successfully solve not only the economic and social problems of communist society, but also social and environmental problems – harmonization of relations between society and nature” [6]. We can speak seriously about state environmental policy starting with the resolution “On the radical restructuring of nature conservation in the country”, issued jointly by the Supreme Council and the Council of Ministers of the USSR on January 7, 1988. In accordance with this resolution, it was decided to create a new "Union-Republican State Committee of the USSR for the Protection of Nature", which was called the "State Committee for the Protection of Nature and Natural Resources of the USSR" (Goskompriroda of the USSR). In fact, the USSR Goskompriroda became the first state agency in Soviet history that was responsible for conducting environmental policy in the country. Moreover, the USSR State Committee for Nature Protection was obliged to develop new measures to improve the efficiency of nature protection, as well as the rational use of natural resources, as well as to monitor compliance with environmental standards. In addition, the USSR Goskompriroda had the right to suspend the activities of enterprises and the construction and expansion of industrial or other facilities in the event that these works were not carried out in accordance with environmental legislation.

In practice, the most successful example of greening in the USSR can be called the system of MSW management. There was no separate collection in the modern sense in the USSR, however, there was a wide network of collection points where individual fractions were accepted. This made it possible to provide, for example, 22 % [9] of recycled pulp in the entire paper industry. This state of affairs was dictated by economic considerations of resource and energy efficiency.

– Greening 2.0 (1996-2021).

The greening of production in Russia followed the global environmental trends of the late 20th century – early 21st century, which were set, first of all, at the UN Conference on Environment and Development (June 3–14, 1992, Rio de Janeiro, Brazil) [4]. In 1996, the Concept of Russia's transition to sustainable development was developed, which states as one of the directions of such a transition "the development of a system for stimulating economic activity and establishing limits of responsibility for its environmental results, in which the biosphere is no longer perceived only as a supplier of resources, but as the foundation of life, the preservation of which should be an indispensable condition for the functioning of the socio-economic system and its individual elements” [8]. Subsequently, various

mechanisms for the transition to sustainable development were implemented in Russia, for example, certification according to ISO 14001 standards, which was required to intensify international cooperation.

The main event of the last decade in the field of greening is the adoption by the leaders of 193 countries in 2015 of the "Transforming our world: the 2030 Agenda for Sustainable Development", the adoption of the 17 global sustainable development goals (SDGs) and the Paris Summit on climate change. Global initiatives have significantly changed the situation in the implementation of the concept of sustainable development, which is based on a new type of environmentally oriented economy. In general, greening at this stage was carried out not only for economic, but also for market reasons.

– Greening 3.0

The beginning of 2022 crystallized and brought to a new level the risks of the external environment, in a certain way reducing the importance and removing the international obligations that Russia has assumed in the field of greening over the past decades. What can become an important factor in the "nationalization" of greening, the implementation of a greening policy aimed primarily at the population of the country, at reducing various environmental risks (public health, ecosystems, recreational opportunities, natural capital, etc.).

Table – Comparison of the stages of greening production in Russia

Greening stage	*Level of institutionalization*	*Factors*	*Importance in public opinion*	*Efficiency*
1.0	Low	Economic	Low	High
2.0	Medium	Economic, market	Increasing	Low
3.0	*High*	Economic, *social*	Above average	*High*

Such a transition must be carried out on the principles of sustainable development in their most accurate interpretation – on the principles of socio-ecological and economic balance, in which all three components are equivalent.

The main conditions for the effectiveness of the new stage of greening production in Russia:

1) For these purposes, first of all, it is necessary to increase the level of institutionalization of the greening of production and sustainable development. In conditions of colossal pressure on all public institutions, the sustainability of all elements is important: the economic system, the social sphere and the environment. Therefore, a new document of the country's strategic development is required, which would take into account all the new circumstances and finally consolidate sustainability as a fundamental principle.

2) When implementing projects for the greening of production, the key indicators of the assessment should be indicators that characterize the impact on the population. The volume of production, the size of budgetary provision, the dynamics of GRP, the level of inflation, the volume of emissions and discharges of pollutants,

the area of protected areas and other similar indicators cannot and should not be an end in itself. The standard of living of the population and its dynamics are integral and resulting indicators that need to be assessed.

3) Ecologization of production ≠ greening of production. Most industries are located close to settlements, other industries, infrastructure facilities, etc. Ecologization of production without taking into account the local external environment is a priori less effective. Ecologization must be carried out comprehensively. Some enterprises can use the secondary resources of another, the costs of greening can be shared, etc. An example of such an approach can be the creation of infrastructural socio-ecological and technological systems in large agglomerations, in which: "urban metabolism" is used; circular flows of energy and resources are created instead of traditional input-output models; reduced consumption of finite resources to meet human needs through the use of ecosystem services; “material flow analysis” is applied, linking the ecology of the urban environment and the urban economy; large-scale perspectives are taken into account when designing sustainable flows of energy and resources in urban areas.

4) "Green" economy, circular economy, low-carbon economy, bioeconomy and other types of eco-oriented economic models cannot be self-sufficient, they are not sustainable by definition. We need to move from "end of the pipe" thinking to "beginning of the pipe" thinking. Truly green businesses combine all sorts of "eco-economics" rather than trying to treat the symptoms.

5) The consumer is also responsible. The population is not just a beneficiary of the greening of production, but also its object. Ecological thinking and responsible consumption are one of the pillars of the greening of production. Raising the level of ecological culture of the population is necessary no less than the greening of production itself.

As can be seen, at the present stage, the greening of production cannot be carried out in isolation from the achievement of social goals and without taking into account the entire life cycle of goods: from resource extraction to final consumption and disposal. Therefore, this process must be carried out based not only on economic reasons, but on the principles of socio-ecological and economic - sustainable regional development.

However, the sustainable development of the territory as a process leading to an increase in the quality of life of the inhabitants of the territory by achieving a balance of socio-ecological and economic development, in turn, has its own specifics. Such development is carried out on the basis of the rational use of the resource potential of the territory, taking into account the geographical features and characteristics of the regional economy (infrastructure, industry, the potential of individual cities, etc.). It is necessary to take into account what and how they produce in a given territory, the eco-intensity of this production, as well as what and how they consume – the ecological footprint of the consumption of a given territory, since production and consumption systems are responsible for the imbalance between the economic subsystem and the environment of this territory.

An analysis of the Sustainable Development Goals (UN General Assembly, 2015) shows that 7 out of 17 goals (SDG 2 – Zero hunger, SDG 6 – Clean water and

sanitation, SDG 7 – Affordable and clean energy, SDG 9 – Industrialization, innovation and infrastructure, SDG 11 – Sustainable cities, SDG 12 – Responsible production and consumption, SDG 14 – Preservation of marine ecosystems) are related to production and consumption to varying degrees. Therefore, one of the priority measures for the transition to sustainable development of regions is the formation of territorial sustainable systems of production and consumption.

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OPPORTUNITIES FOR THE IMPLEMENTATION OF THE FEDERAL PROJECT “CLOSED-LOOP ECONOMY” IN THE PULP AND PAPER INDUSTRY

Abstract. The article examines the opportunities for participation of the pulp and paper industry in the implementation of the objectives of the federal project "Closed Loop Economy" in terms of the potential to minimize solid waste disposed at landfills and the restoration of disturbed ecosystems.

Keywords: closed Loop Economy, waste, secondary resources, reforestation, pulp and paper industry.

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ВОЗМОЖНОСТИ РЕАЛИЗАЦИИ ФЕДЕРАЛЬНОГО ПРОЕКТА «ЭКОНОМИКА ЗАМКНУТОГО ЦИКЛА» В ЦЕЛЛЮЛОЗНО-БУМАЖНОЙ ПРОМЫШЛЕННОСТИ

Аннотация. В статье рассматриваются возможности участия целлюлозно-бумажной промышленности в реализации целей Федерального проекта «Экономика замкнутого цикла» с точки зрения потенциала минимизации размещаемых на полигонах твердых отходов и восстановления нарушенных экосистем.

Ключевые слова: экономика замкнутого цикла, отходы, вторичные ресурсы, лесовосстановление, целлюлозно-бумажная промышленность.

On 6 October 2021, Russian Government Decree No 2816-r approved a List of Initiatives for Socio-Economic Development of the Russian Federation until 2030. Four initiatives were presented in the section “Environment”, one of which is the “Closed Loop Economy”. In January 2022, the Passport of the Federal Project “Closed Loop Economy” with a budget of 30.2 billion rubles was approved. [1] (until 2030). The project includes six areas:

1. Reducing waste generation.
2. Formation of infrastructure for waste collection for recycling.
3. Encouraging the use of recyclable materials.
4. Transition to the use of ecological packaging.
5. Introduction of a waste movement monitoring system. 6.
6. Eco-education.

The following are identified as key objectives of the Federal Project (for 2030):
– index of use of secondary resources and raw materials from waste – 32 %;
– proportion of packaging types recycled – 85 % [1].

The closed-loop economy is an alternative concept to the traditional model of economy, which implies a fundamentally new approach to production, consumption and economic activity based on renewable solutions and business models. The main objectives of the solutions and business models adopted to implement this concept are to preserve the value of things, materials and resources in the economy as long as possible and to eliminate waste. What in a traditional linear economy is considered waste, in a closed-loop economy becomes an asset and a resource. There are three ways to achieve a change in the way resources are used: to close the production cycle completely, to make the cycle as narrow as possible, to slow it down. The principles of the new system of closed-loop economy are: prevention of waste production, maximum extraction of valuable substances from the used goods, use of separate waste collection system, restoration of ecosystems [2].

The main resource of the pulp and paper industry is wood. Wood is a renewable resource, i.e. it is possible to grow forests in areas that have been subject to logging, fires, etc. Complete regeneration of forest in our climatic conditions takes from 80 to 120 years [3].

The domestic timber industry (FIC), which includes the pulp and paper industry (PPM), occupies an insignificant place in the structure of the Russian GDP. In 2020, the share of the LIC was 0,75 %. The share of the pulp and paper industry products is 22,2 % in the production structure of the forest industry complex. The contribution of the pulp and paper industry to the formation of a closed-loop economy can be very significant [4].

The pulp and paper industry is a consolidated industry, with large enterprises accounting for about 70 % of the total output. The industry is based on large holdings that include, in addition to the pulp and paper companies themselves, logging, woodworking and wood-chemical production. Large enterprises of the industry have a fixed logging area. Almost all of them, as exporters, have been certified under the FSC system, which has now been replaced by the domestic analogue, Forest Stewardship Council (FSC). Both systems aim to promote sustainable forestry, efficient reforestation and the conservation of biodiversity. It is not yet possible to get reliable information on the Forest Benchmark certificate holders as the website is in test mode. Companies (AO Ilim Group, PJSC Segezha Group, etc.) apply intensive forest management technologies and for quality reforestation open their own nurseries for seed material preparation and seedling production, including those with a closed root system. In addition to seeding and planting, companies organise thinning, protection of forests against fires and illegal logging. There are no official

statistics; however, according to experts, fires at logging sites assigned to responsible forest users occur much less frequently than the national average [5, 6].

Wood, unlike metal or glass, cannot be recycled to produce material of the same quality, so the principle of cascading is applied. The concept of cascading is defined as the efficient use of a resource by using residues and recycled materials to increase the overall availability of biomass within a given system [7].

From a technical point of view in cascade use, wood usually suffers a loss of quality at each stage of conversion, with a build-up of contaminants during processing due to past use of preservatives, dyes, glues, etc., so sorting wood waste in mixed fractions is a complex task. An example of a successful solution to this technical challenge is paper recycling. From a market perspective, the costs of collecting, sorting and cleaning used wood make its price comparable to that of virgin wood, which reduces the economic attractiveness of cascade recycling. The Russian LPC industry uses elements of cascade processing (processing sawdust into pellets, waste paper into cardboard, hydrolysis, etc.).

From a technical point of view in cascade use, wood usually suffers a loss of quality at each stage of conversion, with a build-up of contaminants during processing due to past use of preservatives, dyes, glues, etc., so sorting wood waste in mixed fractions is a complex task. An example of a successful solution to this technical challenge is paper recycling. From a market perspective, the costs of collecting, sorting and cleaning used wood make its price comparable to that of virgin wood, which reduces the economic attractiveness of cascade recycling. The Russian LPC industry uses elements of cascade processing (processing sawdust into pellets, waste paper into cardboard, hydrolysis, etc.).

The forest as an ecosystem is a natural reservoir of carbon, keeping it out of the atmosphere. Carbon is stored in living trees, standing dead trees, felled wood, soil, etc. Significant amounts of carbon are also stored in wood products used today. These products include paper, wooden containers, and lumber used for building construction. The duration of carbon storage in paper is 6 years, furniture stores carbon for 30 years, apartment buildings 70 years, single family houses 80 years before 1980 and 100 years after 1980. Ultimately, the carbon stored in wood products is returned to the atmosphere by decomposition or combustion, but the time required for this return is an important factor in achieving the decarbonisation goals of the economy [8].

The concept of “Closed Loop Economy” involves reducing waste primarily through recycling. Large-tonnage waste from pulp and paper production includes lignin, sludge, scrap, etc. There is an old practice of using lignin as compost in agriculture. However, this is not the only application of this class of substances. Leading companies in the industry produce liquid and powdered lignosulphonates as commercial products, which are widely used in various sectors of the economy: building materials industry, metallurgy, mining and oil production, construction, etc. The bark is used to produce compost, fodder products, tannins and as fuel for technological energy. Bark, after mulching, can be used in agriculture to improve soil quality. There is a large amount of research aimed at finding an efficient use of pulp and paper waste once frozen and in need of renewal.

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ANALYSIS OF THE EFFECTIVENESS OF MEASURES TO PROTECT CITIZENS ON THE BASIS OF A SOCIAL CONTRACT

Abstract. The article considers current issues of social protection of the population, implemented under the state program to promote employment of low-income citizens on the basis of social contracts, analyzes the accumulated experience in St. Petersburg. The authors, using the data of a comprehensive sociological survey conducted in the employment centers of St. Petersburg, identify trends in the ongoing changes in the social protection of the population in the region and assess the effectiveness of the measures taken.

Keywords: social protection, regional social policy, employment of low-income citizens.

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АНАЛИЗ ЭФФЕКТИВНОСТИ МЕР ПО ЗАЩИТЕ ГРАЖДАН НА ОСНОВЕ СОЦИАЛЬНОГО КОНТРАКТА

Аннотация. В статье рассматриваются актуальные вопросы социальной защиты населения, реализуемые в рамках государственной программы содействия трудоустройству малообеспеченных граждан на основе социальных контрактов, анализируется накопленный опыт в Санкт-Петербурге. Авторы, используя данные комплексного социологического опроса, проводимого в Центрах занятости Санкт-Петербурга, определяют тенденции происходящих изменений в деле социальной защиты населения в регионе и дают оценку эффективности принимаемых мер.

Ключевые слова: социальная защита, региональная социальная политика, трудоустройство малообеспеченных граждан.

Despite great efforts to solve the problems of improving the social and material situation of citizens, there are still problems in this area in St. Petersburg. One of such problems can be noted the problem of employment of low-income people on the basis of a social contract. [1, 2] A complex sociological study (n = 550), which included a questionnaire survey of low-income citizens who had sought help in finding a job from the regional employment services, showed that 32 % of these citizens were under 35, 38 % were from 36 to 45, 27 % were from 46 to 55, and 3 % were over 56 years old.

Over half of the respondents who went to St. Petersburg Employment Centers were motivated by economic reasons, i.e. 62 % of them were ready to find a job in any profession or occupation that was in demand on the labor market, and only 18 % were eager to find a job in their own occupation. 14 % of the respondents preferred to receive a benefit, and 6 % expressed their willingness to retrain, to get a new profession.

The desire of respondents (up to 50 %) to work at a state enterprise or institution can be considered a definite trend, which can be explained by the unstable socio-economic situation caused by Western sanctions, when state enterprises and institutions, unlike businesses, can provide guarantees in the sphere of labor. 40 % of respondents have no special requirements for the place of work. 15 % would prefer to work at a specialized enterprise with developed infrastructure to provide comfortable (additional) working conditions. As a rule, these are citizens with disabilities, whose work requires additional conditions.

The most acceptable for the respondents was "flexible schedule" (35 %) or "home-based work" (20 %), another 15 % preferred "part-time/weekend work" and only every fifth respondent (20 %) agreed to work full-time. Part-time, seasonal, or casual "part-time" work is of no interest to respondents (10 %).

Importance in the understanding of job search for low-income citizens is the level of education and the process of professional re-training in employment. As the analysis of the survey results showed, more than a third of the citizens who applied to the employment service did not have professional education, 56 % had specialized secondary education and 5 % had higher education.

Based on the results of the survey, the majority of citizens are willing to undergo additional training (75 %) and only 10 % of respondents refused to undergo training, while 15 % of citizens found it difficult to answer. It also turned out that a significant part of citizens have difficulties related to labor adaptation (45 %), 20 % noted job satisfaction, and more than a third (35 %) found it difficult to give a specific answer. [3]

Summarizing the general results of the sociological study of the employment management system of low-income citizens of St. Petersburg, we identified the following constraints: (1) insufficient level of professional education and competence; (2) insufficiently effective system of interaction between the employer and employment centers of St. Petersburg. In this regard, the development of a training program for low-income citizens with the participation of employers of St. Petersburg and their employment on a targeted basis, through interaction between employers and employment centers of St. Petersburg is of particular importance.

As part of this direction it is proposed to use the tool of additional vocational education based on distance learning technologies and computer-based assessment system. Along with this, in view of the relevance of the problem of employment of low-income citizens, it is important to ensure the establishment of mutually beneficial cooperation with large, medium and small enterprises in the region.

To assess the effectiveness of the above recommendations it is proposed to use the method of expert evaluations. The experts may be the heads of the employment service and employers. As indicators for assessing the effectiveness of the proposed measures can be considered such as:

(1) the number of low-income citizens who improved their skills;
(2) the level of use of distance learning technologies in the process of professional development;
(3) decrease in the share of low-income citizens in the region;

(4) growth of satisfaction of low-income citizens with the process of labor activity;
(5) formation of a holistic system of labor adaptation of low-income citizens;
(6) improvement of the financial component of low-income citizens.

The effects were determined on the basis of the sum of expert evaluations of the above-mentioned indicators. As a result, the following conclusions were made: the most significant changes in the region in the labor adaptation of low-income citizens were a decrease in the share of low-income citizens, improvement of their financial situation based on the formation of an integral system of their labor adaptation.

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LOGISTICAL ASPECTS OF THE TRANSPORT COMPLEX OF THE NORTH-WEST REGION IN THE SYSTEM OF INTERNATIONAL TRADE AT THE PRESENT STAGE

Abstract. This article examines the problem of disruption of cargo shipments between the Russian Federation and neighbouring countries and the importance of the role of logistics in stabilising international trade processes.

Keywords: cargo, transportation, transport, logistics routes, international transport corridors (ITC), supplies.

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ЛОГИСТИЧЕСКИЕ АСПЕКТЫ ТРАНСПОРТНОГО КОМПЛЕКСА СЕВЕРО-ЗАПАДНОГО РЕГИОНА В СИСТЕМЕ МЕЖДУНАРОДНОЙ ТОРГОВЛИ НА СОВРЕМЕННОМ ЭТАПЕ

Аннотация. В данной статье рассматривается проблема нарушения поставок груза между Российской Федерацией и близлежащими странами, а также важность роли логистики в стабилизации процессов международной торговли.

Ключевые слова: груз, перевозки, транспорт, логистические маршруты, международные транспортные коридоры (МТК), поставки.

The territory of the Russian Federation occupies about one third of Eurasia and about one eighth of the Earth's land area. Due to its geographical location, the Russian Federation has a significant place in international transport, including both transit routes and domestic transport. All possible types of transport – sea, river, rail, air, and road – cross its territory due to its diverse terrain.

International Transport Corridors (ITC) were created to ensure comfortable and safe passage of all types of transport. The main idea of any ITC is to concentrate all kinds of transport into one passable route, where all the necessary infrastructure will be created for comfortable passage of transport.

A transport corridor is a part of the national or international transport system that ensures significant international freight and passenger traffic between separate geographic areas, includes the rolling stock and stationary devices of all modes of transport operating in the given direction, as well as the set of technological, organizational, and legal conditions for these traffic flows. [1].

Four ITCs pass through the Russian Federation:

- "Transsib" (Asia – Russia – Europe)
- "North-South" (Northern Europe – RF – Caspian Sea – Persian Gulf – India).
- Pan-European Corridor #2 (Berlin – Warsaw – Minsk – Moscow – Nizhny Novgorod).
- Pan-European corridor #9 (Helsinki – Moscow – Black Sea – Southern Europe).

There are 2 ITCs crossing the North West Federal District – North-South and Pan-European Corridor #9. The international transport corridor North-South in the northwest region of the Russian Federation passes through the city of St. Petersburg and reaches the Baltic Sea, respectively, this route has access to the coastal countries of Europe. Container traffic by sea is the most important in this route, as the majority of this route goes through seas, rivers and canals. Figure 1 shows the North-South ITC.

Figure 1. North-South ITC [2]

Pan-European Corridor 9 in the northwest region of the Russian Federation passes through the land border with Finland. Figure 2 shows the Pan-European Corridor 9 in purple.

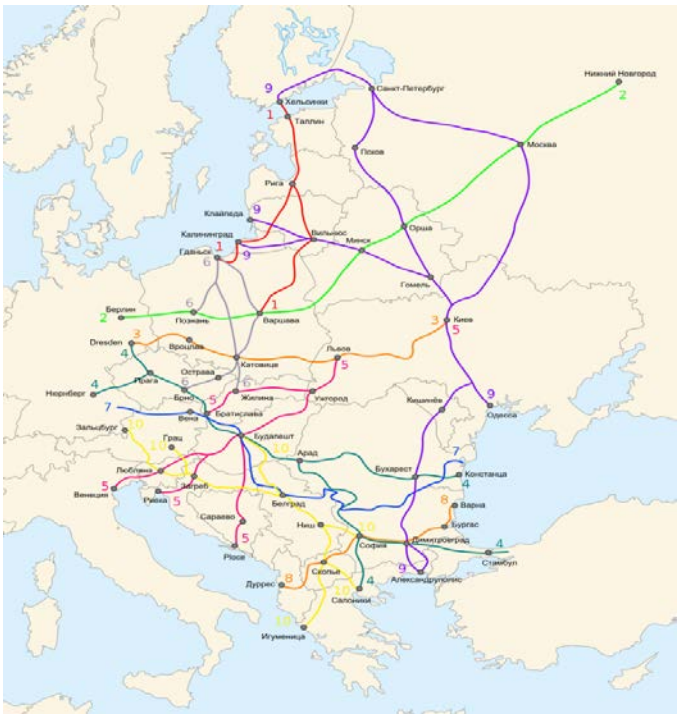

Figure 2. Pan-European Corridor 9 [3]

At the moment, in the context of an acute political conflict, there has been a complication in the movement of goods, disruption of logistical flows by road, rail and air transport. The main problem encountered is the almost total isolation from suppliers, who have provided more than 50 % of the Russian Federation's enterprises with goods.

Considering this problem, it would be advisable to reduce deliveries as much as possible, as at the moment the Russian Federation is suffering losses due to idle transport, cargo that has gone beyond the Russian borders even before the situation has deteriorated. It is worth paying attention to internal logistics flows, and directing funds to strengthen them. At present, the resumption of international shipments is complicated by sanctions from EU countries.

Import substitution and reproduction of own products should be paid attention in order to avoid loss of supplies from countries with which the Russian Federation has a high level of cargo turnover.

Other transport corridors are also worth looking at, in particular the Trans-Siberian Railway, which runs through the eastern part of Russia and Asian countries. Since the beginning of 2022, trade between Russia and China has increased by 30 % [4]. In view of this, it is advisable to build new rail and road routes. It is also necessary to develop the Trans-Siberian infrastructure in order to improve the quality and comfort of supply.

As a result of the data given above, we can say that the development and increase in trade with the countries of Finland, Estonia, Latvia, Lithuania and Poland is currently complicated by sanctions and restrictions. Therefore, the Russian government should pay attention to domestic production and to foreign trade with Asian countries.

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ENHANCING RISK MANAGEMENT PRACTICES IN SME

Abstract. This paper investigates the current state of risk management practices in Small and Medium-sized Enterprises (SMEs) and identifies key challenges and opportunities for improvement. The study finds that SMEs adopt diverse risk management practices, mostly informal or ad-hoc, with limited formalization and sophistication. Despite acknowledging the importance of risk management, SMEs face challenges in implementation, such as limited resources, lack of expertise, time constraints, and optimistic bias. The paper suggests tailored risk management strategies, addressing challenges through promoting awareness, education, and training, fostering collaboration with external stakeholders, encouraging proactive and continuous improvement mindset, and implementing regular monitoring and evaluation to enhance risk management practices in SMEs.

Keywords: risk management, small and medium-sized enterprises (SMEs), informal practices, challenges and opportunities, education and awareness, external stakeholders, tailored strategies.

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СОВЕРШЕНСТВОВАНИЕ ПРАКТИК УПРАВЛЕНИЯ РИСКАМИ В МАЛОМ БИЗНЕСЕ

Аннотация. В данной статье исследуется текущее состояние практик управления рисками в малом бизнесе и определяются основные проблемы и возможности для улучшения. Исследование показывает, что в малом бизнесе применяются различные подходы к управлению рисками, в основном неформальные. Несмотря на то, что владельцы предприятий осознают важность управления рисками, они сталкиваются с трудностями: ограниченные ресурсы, недостаток опыта, ограничения во времени и даже когнитивные искажения. В статье рассматриваются индивидуальные стратегии управления рисками, решение проблем менеджмента рисков путем повышения осведомленности,

образования и обучения, развития сотрудничества со стейкхолдерами, концепция непрерывного совершенствования, а также внедрение регулярного мониторинга и оценки состояния для улучшения практик управления рисками в малом бизнесе.

Ключевые слова: управление рисками, малый бизнес, неформальные практики, проблемы и возможности, обучение и осведомленность, стейкхолдеры, индивидуальные стратегии.

Introduction. Background and Context of Risk Management in SMEs

Small and Medium-sized Enterprises (SMEs) play a critical role in the global economy, contributing significantly to job creation, innovation, and economic growth. As these businesses navigate an increasingly complex and uncertain environment, effective risk management practices become essential to their success and sustainability. However, SMEs often face unique challenges in implementing comprehensive risk management strategies, primarily due to their size, limited resources, and organizational structure.

In the context of SMEs, risk management is particularly important for several reasons. Firstly, SMEs typically have limited resources and capacities compared to larger organizations, making them more vulnerable to the adverse effects of risks. This vulnerability can result in significant financial and operational disruptions, potentially threatening the survival of the enterprise. Secondly, SMEs often operate in dynamic and competitive markets, where they face numerous uncertainties and changing conditions that can give rise to new risks. As such, adopting a proactive approach to risk management is crucial for these businesses to anticipate and adapt to emerging threats and opportunities. Despite the importance of risk management, research indicates that many SMEs do not implement formal risk management processes or practices [1].

SMEs face various risks and uncertainties. However, embracing risk management practices can stimulate innovation and promote growth. By understanding and managing risks, SMEs can seize new opportunities, enter new markets, and develop innovative products and services. Risk management encourages a culture of experimentation and calculated risk-taking, ultimately driving business growth and development [2]. It is worth noting that risk events are not only about exposure to danger but also often represent opportunities to pursue business ventures that could promise valuable growth.

In light of these challenges, there is a growing need to enhance risk management practices within SMEs, helping them navigate the complexities and uncertainties of today's business landscape.

The primary objective of this paper is to explore the current state of risk management practices in SMEs, identify key challenges and opportunities, and provide data for further analysis to advance the research.

This paper provides only a brief description due to publication limitations. However, detailed and in-depth explanations will be provided in the next stages of this research and subsequent publications.

Overview of existing risk management practices in SMEs

While risk management practices may vary depending on the specific characteristics, industry, and geographical location of each enterprise, this analysis aims to offer a general understanding of the common approaches and tools used by SMEs to manage risks.

- Informal and Ad-hoc Risk Management: Many SMEs rely on informal and ad-hoc risk management practices, often driven by the experience and intuition of business owners and managers [3].
- Enterprise Risk Management (ERM): Some SMEs have adopted more formal ERM frameworks, which involve a holistic and integrated approach to managing risks across the organization [4]. These frameworks can be tailored to the specific needs and resources of each SME, at the same time, such frameworks may overlook the operational specificity of SMEs and their aptitude for agility.
- Risk Identification and Assessment: Common risk identification techniques employed by SMEs include brainstorming, interviews, surveys, checklists, and scenario analysis.
- Risk Mitigation and Controls: To address identified risks, SMEs may implement a range of risk mitigation strategies and controls. These can include risk avoidance, risk reduction, risk transfer, and risk acceptance.
- Risk Monitoring and Communication: Ongoing monitoring and communication are crucial elements of effective risk management in SMEs. This may involve regular reviews of the risk landscape, tracking of risk indicators, and timely communication of risk-related information to relevant stakeholders [5].

Theoretical and Empirical Support for Enhancing Risk Management in SMEs

The importance of enhancing risk management practices in SMEs is supported by both theoretical and empirical research in the fields of risk management, organizational behavior, and entrepreneurship. Hereafter the overview of key theories and empirical findings that underpin the rationale for improving risk management practices in SMEs is provided.

- Portfolio theory, developed by Harry Markowitz, states that by diversifying investments across a range of assets, investors can optimize their risk-return profile. This theory can be applied to SMEs by suggesting that businesses should diversify their risk exposures to optimize their overall risk profile. Enhancing risk management practices in SMEs can help identify opportunities for diversification and support strategic decision-making to mitigate potential risks.
- The Resource-Based View (RBV) of the firm emphasizes the importance of internal resources and capabilities in driving competitive advantage and business performance. Effective risk management practices can be seen as a valuable resource and capability that enables SMEs to anticipate and manage potential threats, thereby enhancing their competitive advantage and long-term sustainability.

- Contingency theory posits that organizations should adapt their management practices to the specific context and environment in which they operate. In the context of SMEs, this implies that risk management practices should be tailored to the unique characteristics and challenges faced by these businesses, taking into account factors such as industry, size, and geographic location.
- Numerous empirical studies have demonstrated a positive relationship between effective risk management practices and various aspects of SME performance, such as financial performance, growth, and innovation[6].
- Regulatory and Policy Support: The importance of risk management in SMEs is increasingly recognized by regulators, policymakers, and industry associations. These stakeholders are implementing various initiatives and policies to support and promote risk management practices among SMEs, such as providing guidance, resources, and training programs. For example, the International Organization for Standardization (ISO) developed ISO 31000, a risk management standard that can be adopted by organizations of all sizes and sectors, including SMEs.

Key findings from the initial data gathering and analysis

The data analysis conducted through the integration of quantitative and qualitative methods yielded several key findings related to risk management practices in SMEs. These findings address the research objectives and provide valuable insights into the challenges and opportunities faced by SMEs in implementing risk management practices.

- The study found that SMEs have adopted a diverse range of risk management practices, but most likely tend to stick to informal or ad-hoc approaches to risk management. The level of formalization and sophistication of these risk management practices is quite low and none of the enterprises who took part in a survey adopted any formal risk management practices or ERM frameworks.
- The majority of SME owners and managers surveyed acknowledged the importance of risk management for their businesses. They recognized that effective risk management practices contribute to increased resilience, sustainability, and competitiveness. However, there is still a significant gap between the perceived importance of risk management and the actual implementation of these practices in SMEs.
- The study identified several challenges and limitations faced by SMEs in implementing risk management practices, including limited resources, lack of expertise and understanding of risk management approaches and tools, and how intensive should risk management be. Additionally, SME owners and managers often have an optimistic bias, which may lead to underestimating the potential risks and impacts on their businesses [7].

Conclusion

This study aimed to explore the current state of risk management practices in SMEs, identify the challenges and opportunities faced by these businesses in implementing risk management practices, and provide actionable recommendations for enhancing risk management in this crucial sector of the global economy. In this

section, the main findings of the study and their implications for enhancing risk management practices in SMEs are summarized.

Main Findings:

1. Risk management practices among SMEs are diverse and vary in their level of formalization and sophistication.
2. The majority of SME owners and managers acknowledge the importance of risk management for business resilience, sustainability, and competitiveness.
3. SMEs face several challenges in implementing risk management practices, such as limited resources, lack of expertise, time constraints, and optimistic bias.
4. External support, including industry associations, government programs, and consultants, plays a crucial role in assisting SMEs with risk management.
5. Successful risk management practices in SMEs are characterized by strong leadership commitment, a proactive approach to risk management, and a culture of continuous improvement and learning.

Implications for Enhancing Risk Management Practices in SMEs:

1. Develop tailored risk management strategies that consider the unique characteristics, needs, and contexts of individual businesses, integrating risk management theories and practices with the practical experiences of SME owners and managers.
2. Address the challenges and limitations faced by SMEs in implementing risk management practices through promoting awareness, education, and training; providing access to resources and tools; and developing mentorship and support networks.
3. Foster collaboration between SMEs and external stakeholders, such as industry associations, government programs, and consultants, to enhance knowledge sharing, resource allocation, and best practice dissemination.
4. Encourage SME owners and managers to adopt a proactive and continuous improvement mindset in risk management, fostering strong leadership commitment and a culture of learning.
5. Implement regular monitoring and evaluation of risk management practices to identify areas for improvement and track the effectiveness of risk management strategies over time.

In conclusion, the main findings of this study provide valuable insights into the current state of risk management practices in SMEs, the challenges and opportunities faced by these businesses in implementing risk management practices, and the factors that contribute to effective risk management. By understanding these findings and their implications, SME owners, managers, policymakers, and industry stakeholders can work together to develop targeted interventions and strategies that enhance risk management practices in SMEs, ultimately contributing to improved resilience, sustainability, and competitiveness in this vital sector of the global economy.

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5PL LOGISTICS AS THE FUTURE OF LOGISTICS INDUSTRY. ACTUAL INSTRUMENTS AND POSSIBILITIES FOR FUTURE DEVELOPMENT

Abstract. The transformation of logistics services over the past 60 years has significantly changed the perception of the role of logistics and logistics industry representatives in building both local and global companies. In this regard, it is extremely important to understand how the industry works, how its participants differ, what factors affect the conduct of business, and what development prospects carries the vanguard of its development, the 5PL sector.

Keywords: logistics, e-logistics, 5PL, logistics digitalization, supply chain management.

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5PL КАК БУДУЩЕЕ ЛОГИСТИЧЕСКОЙ ИНДУСТРИИ. АКТУАЛЬНЫЕ ИНСТРУМЕНТЫ И ВОЗМОЖНОСТИ ДЛЯ БУДУЩЕГО РАЗВИТИЯ

Аннотация. Трансформация логистических услуг за последние 60 лет существенно изменила представление о роли логистики и представителей логистической отрасли в построении как местных, так и глобальных компаний. В связи с этим крайне важно понимать, как устроена индустрия, чем отличаются ее участники, какие факторы влияют на ведение бизнеса и какие перспективы развития несет в себе ее авангард – сектор 5PL.

Ключевые слова: логистика, электронная логистика, 5PL, цифровизация логистики, управление цепями поставок.

Introduction

The logistics industry is one of the most important components of the infrastructure of any country, any city, and even any region. The wide distribution of

the Internet network throughout the Earth, coupled with the globalization of politics, economics and culture, stimulates the integration of previously inaccessible markets, the cooperation of companies that were previously separated by thousands of kilometers, the exchange of ideas at a level never seen before. Logistics companies can and should use this to help people build both literal and metaphorical bridges. Such a trend could not but affect the role of logistics in building a business both in the domestic and international markets. The last 60 years have significantly shaken traditional ideas about the place of logistics in the hierarchy of internal business processes and turned it from a method of transporting goods to the end customer into a highly effective way to optimize the costs of the entire business. Today, logistics is a full-fledged link in the value chain of a product or service.

The main objectives of this article are the description of all levels of modern logistics, the allocation of general and individual factors affecting the conduct of business at each of these levels, as well as the characteristics of future development trends in the 5PL sector.

From 1PL to a 5PL company. Main differences and similarities

Since the second half of the last century, the logistics industry has made an incredible leap in its development, both qualitatively and quantitatively. A qualitative leap can be understood as the expansion of the range of services provided on the market, the emergence of integrated online platforms for logistics services and the previously unimaginable market of online marketplaces, responsible for the growing attention to the 5PL sector and its further transformation into something new. The quantitative leap is expressed in the growth of the volume of the global logistics market itself and the growth in the number of its participants, respectively.

Traditionally, the main component of the logistics business was the transportation of goods by various modes of transport available in a certain historical period. In fact, this logic has remained unchanged and remains unchanged for all levels of logistics, despite neither globalization nor the digitalization of the economy, because the main task of such companies is to ensure the functioning of material flows and goods flows, and the difference lies mainly in whether through their own or third-party vehicles the movement of goods is provided, and in what part of the value chain are the core competence and competitive advantage of the company.

Usually, representatives of the 1PL sector are among the owners of small and medium-sized businesses, often manufacturers of their own goods, for which logistics is not the main activity. By building its own logistics chain, such a business reduces its costs for the delivery of goods to the company. All of these companies could outsource this part of their business, but in addition to material savings on other people's services, companies receive insurance against potential reputational costs due to violations by third parties of corporate standards for the provision of services. In small and medium-sized businesses, their reputation and the overall quality of the customer experience can sometimes be as important as the quality of the product itself.

For a 2PL company, it is critical to identify and nurture their core competitive advantage, as the service itself – delivering someone else's cargo on time to a designated consignee, does not provide much room for innovative competitive

advantage. Warehouse operators can act as other participants in this area of the market. The development of the client's business and the complication of its logistics chain leads to the almost inevitable need to expand the range of outsourced tasks.

That is how 3PL companies usually appear on the scene. In addition to the tasks completed by 2PL companies, such companies also take over supply chain planning. The range of their services may also include transportation by all modes of transport, warehouse logistics, customs clearance, logistics consulting. Such companies often involve 2PL companies for the direct transportation of goods, while they focus on planning and information flow.

The next level of development and expansion of the range of logistics services was the emergence of 4PL companies, to which customers transfer full control of their supply chains, turning such a company into their logistics integrator. A 4PL company develops a logistics chain for its client from scratch, and then also manages it all the way, greatly facilitating the client's life, and then involves 2PL and 3PL companies in the direct execution of operations. The activities of 4PL companies are based on the principles of SCM (Supply Chain Management). A feature of this level is the client's need to provide the logistics integrator with access to all commercial information, including information about sales, suppliers, customers, etc. Thus, the integrator gets the opportunity not only to manage information flows, but also quickly and efficiently make decisions depending on current indicators. But the downside of this deep integration between the service provider and its customer comes with its own risks, which reduces the overall demand for such services for fear of disclosure of confidential information and industrial espionage. In such conditions, an individual approach to each client and the development of a logistics chain depending on the characteristics of a specific business are of particular importance, which expands the limits of the value chain for 4PL companies.

Having proved its effectiveness on the example of 4PL companies, the method of delegation of both planning and management of a supply chain has become a highly demanded option in various markets around the world. Material flows and information flows, which have grown significantly due to globalization and digitalization, have become the cherished goal of many businesses. The shortening of the life cycle of many goods and, as a result, the acceleration of the process of trade also had an impact. And such a request did not go unnoticed, giving life to a new option for the development of world logistics and world trade in general – 5PL companies and e-logistics respectively.

Unlike other levels of logistics, a 5PL company is inherently an organizational system for information flows and not a collection of material assets used to provide services. The core competency of such a company is the ability to effectively manage the flow of information, redistribute information between service providers and quickly make the right decisions based on the information. The company must optimize the client's business with its decisions, take into account a huge number of factors and adapt to changing circumstances. As is well known, a person is capable of outstanding results in such activities, but he also has limitations in terms of the amount of information that can be effectively processed, so the achievements of technical and technological progress come to help and to widen such capabilities. In

the current realities, 5PL companies are significant drivers for the development of data science technologies, Internet of Things and Machine Learning technologies. The information systems of these companies directly integrate suppliers of goods and services and their consumers, turning them into nodes of a huge network through which goods flows are moved by 2PL contractors. In such situations 5PL companies transform into more of a logistic network manager rather than a distribution manager.

Through information support, detailed planning and the use of the latest technologies, 5PL companies are able to integrate their service into the current logistics and production model of all participants in the system, while in the case of working with 3PL and 4PL companies, business processes almost always had to be significantly restructured.

Possibilities for the future development

The competitive advantage of the 5PL company is the effective integration of information technologies that help automate the work of low-skilled employees not only in their own company, but also in the organizational structure of their clients, which can significantly reduce the costs of the logistics component of the business. At the same time, this can also include a reduction in the need for human staff in the logistics department, since machine learning technology and data science are able to analyze much larger data sets and draw conclusions from this data much faster.

At the moment, such automation has mostly affected, as mentioned earlier, low-skilled labor, which includes the work of loaders, sorters and packers. Every day more and more such specialists are being replaced by machines and simple robots controlled either directly by a person or even by a computer program, which practically frees a person from the need to monitor the progress of work. The whole process is greatly simplified due to the widespread introduction of the Internet of Things technology, in particular, bar coding and 3D coding, a unified product labeling system and unified warehouse accounting platforms, distribution and reduction in cost of geolocation sensors, automation of warehouse operations, etc.

And if robot loaders are already our reality, the next stage in the development of the industry is supposed to be artificial intelligence technology, which, coupled with data science and machine learning, should replace the more skilled work of logisticians. In this case, the task of the corresponding software will be to accumulate expert knowledge and formulate its own new conclusions, new solutions for the system under control. All the simplest tasks will be solved by the computer independently, and specialists will receive expert support when making more important managerial decisions.

Companies like Aliexpress or Amazon show us what the future of 5PL logistics will most likely look like, all the growth potential for both the logistics industry itself and for the world trade in general. After all, it is not for nothing that these companies are among the leaders in the lists of the most expensive companies in the world. At the moment, it is these trading companies that are most often cited as examples of 5PL. Achieving this level is also possible for manufacturing companies, but the process is much more difficult, since 5PL is not so much a new variation of a transport company as an information and organizational add-on to existing services. Therefore, in order to move a manufacturing company to this level, firstly, it is

necessary to carry out almost complete digitalization of all processes, which will require not only significant investments, but also large computer capacities. Perhaps some factories will have to wait for the widespread use of 6G technology for this – the bandwidth of the current infrastructure may not be enough considering that the 5G technology is not as widespread as it might seem, in manufacturing regions especially. Secondly, manufacturing companies are much more worried about the safety of confidential information and their technologies than trading companies, and, as mentioned earlier, neither 4PL nor 5PL are possible without deep cooperation between the supplier of the product or service and the logistics integrator.

Conclusion

Not only do the factors that influence how 5PL companies do business differ from other logistical tiers, but also how the same factors affect companies' business. For example, technical and technological equipment of a business is much more important for 5PL companies than for 2PL or even 3PL. The factor of customs restrictions and charges of each country or region, common for all global trade, on the one hand, has less direct influence on business of 5PL companies like AliExpress, since the difference in customs charges is compensated by the seller, who is consciously choosing the market to do business in based on that choice as well. On the other hand, a dramatic change in the legislation of any sufficiently large market can noticeably shake up online marketplace operations, because it will make a large part of sellers – the foundation of their business on a par with customers – leave the marketplace at a moment's notice. Having analyzed in this way most of the external factors of doing business, it can be concluded that all logistics companies, regardless of their place in the hierarchy described above, are deeply interconnected and work on a daily basis to solve similar problems, albeit analyzing them from different angles. In this way, specialists are convinced of the inevitability of the emergence of new companies and solutions, which, in turn, will lead to the consolidation of logistics chains, the merging of functions and methods in order to reduce the costs associated with the movement of material, financial or information flows across the global economy.

A specific feature of the logistics industry that is interesting in itself is the near absence of competition between logistics companies of different levels. For example, a company that has clearly determined for itself the need to purchase the services of a 3PL company, will not run at the last moment to a 2PL competitor – the services provided and the objectives of the client in regard to such services are too different.

From all of the above, we can conclude that despite the huge potential for the development of the 5PL sector, logistics companies of other levels may not be afraid of an unexpected market break that would put them out of business. Rather, with a willingness to change and the ability to adapt, there will be an integration of various services, companies and corporations on several competing online platforms, which will act as a link between a wide range of sellers of goods and services, their customers and the logistics industry as a whole.

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MESOECONOMIC MANAGEMENT AND ITS ELEMENTS

Abstract. The article describes the features of mesoeconomic management and its most important elements, which determines the competitive effectiveness of the company.

Keywords: mesoeconomics, mesoeconomic management, benchmarking, quality assessment system, human capital management, knowledge management.

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МЕЗОЭКОНОМИЧЕСКИЙ МЕНЕДЖМЕНТ И ЕГО ЭЛЕМЕНТЫ

Аннотация. В статье описаны особенности мезоэкономического менеджмента и рассмотрены его важнейшие элементы, от эффективности работы которых зависит конкурентоспособность компании.

Ключевые слова: мезоэкономика, мезоэкономический менеджмент, бенчмаркинг, система оценки качества, управление человеческим капиталом, управление знаниями.

The division into macro- and microeconomics, which was traditional in economic theory, is nowadays unacceptably limited. Mesoeconomics as a part of the economy is becoming increasingly important. Mesoeconomics studies the activities of multi-sectoral enterprises, which are technologically interconnected and managed from a single center. Mesoeconomics occupies an intermediate place between microeconomics, which studies the behavior of certain households, enterprises and markets, and macroeconomics, the main task of which is to study the mechanism of economic growth in the entire country.

At the meso-economic level, market principles and centralized planning mechanisms are combined. Moreover, interindustry production complexes represent a modern alternative to the middle management level in the administrative-command economy. It is important that on the meso-economic level the market mechanism and the mechanism of pricing are transformed, the behavior of buyers and sellers is changed.

If to consider any inter-branch production complex as object of management (for example, a timber industry complex) it is necessary to distinguish its three levels: primary, meso-economic and state. At that, the most important factors of competitiveness, such as adaptability to external and internal changes or efficiency of the resources use are determined exactly at the meso-economic level of management.

The most significant features of meso-economic management can be distinguished as follows:

1. Going beyond the boundaries of the individual business units, that are part of an inter-industry production complex. The inter-industry synergy influences the product range choice, technology, markets, determines the price level, etc.
2. Close attention to increasing the competitiveness of each individual business unit in the inter-industry production complex.
3. Significant diversity in the organizational and legal forms of business units, that are parts of an inter-industry production complex.
4. Transition from the management of material flows within individual business units to the inter-company material flows management.

Researchers distinguish various factors of meso-economic management efficiency [1]:

- Economic, such as priorities in investment policy, closeness of production chains within inter-industry complexes, complexity of product solutions, etc.
- Environmental, such as product life-cycle extension or resource recovery.
- Scientific and technological, such as technology transfer or involvement of the scientific community.
- Information, such as information policy, level of digitalization.
- Social, such as the availability of training systems, rotation and social support for employees.

This paper will focus on organizational and managerial factors. In this case, the authors identify specific management elements that are which are only presented on the meso-economic level:

- Business process improvement based on the results of benchmarking within the inter-industry production complex.
- A cluster human capital work system.
- Product quality management across all elements of the value chain within the inter-industry production complex.
- Knowledge management within the cross-industry production complex.

One of the unique elements of meso-economic management is benchmarking of the best business processes. In this case, benchmarking is conducted inside a cross-industry production complex. This approach allows access to a vast array of information about best practices of a large number of enterprises. With more widespread external benchmarking, which is conducted by companies at the primary management level, one company’s performance is compared with its competitors. But access to the data can be very difficult. [2].

Benchmarking within a cross-industry production complex has its own specifics. A comparison of benchmarking stages at the primary and meso-economic levels of management is presented in Table.

Table – Benchmarking stages at primary and meso-economic levels

Primary level [3]	**Meso-economic level**
1) Identifying the objects of comparison; 2) Defining the basic criteria for the evaluation of these objects; 3) Selecting a company or intercompany business unit for comparison; 4) Gathering of relevant information; 5) Analysis of the obtained results; 6) Identification the possibilities of obtained results application.	1) Determining the comparison criteria. 2) Collecting data on comparison criteria for all participants in the inter-industry production complex. 3) Obtained results analysis. 4) Identification of best practices and business processes. 5) Unification systems of management for all enterprises participants on the basis of benchmarking results.

In the benchmarking process on the meso-economy level can be studied: individual business processes, best management practices, coherence of communication between departments, human resource policies, etc. Other focus areas of benchmarking at this level could be the improvement of agency relations between the participants of the complex, identification and satisfaction of partner requests within the technology chain, rational organization of supplier and consumer relations, staff development and motivation.

Product quality management as an element of meso-economic management involves building a system that covers all elements of the value chain and all business units within an inter-industry production complex. Changes are occurring at the level of corporate culture. There is a shift from defect registration to defect prevention, from quality control to product quality management through the factors and processes that determine it.

The generalization of the timber industry complex companies experience allows us to identify the following tasks, that are important to solve in quality management at the meso-economic level:

1) The quality management system should be integrated with the motivation system and serve as one of the criteria for evaluating the manager's performance.

2) The quality management system should be based on a unified system of regulations that can be used by different business units.

3) IT is necessary to have a comprehensive programme of interaction with suppliers of raw materials, materials, services, equipment, etc.

4) Quality management with a systematic approach necessarily includes personnel education and training, development of employees's internal motivation, formation of the right attitude to compliance of technological regulations.

Meso-economic management presents brand new opportunities for human capital management. It is possible to plan the professional-qualification structure of the workforce, the release of workers and the creation of new vacancies. This planning can be done more efficient and forward-looking way.

This is especially important for production complexes which include a large number of city-forming enterprises with low staff mobility.

At the meso-economic level the problem of providing qualified personnel is also solved. At this scale it is possible to prepare the necessary personnel in the in-house educational institutions, both primary and secondary education levels. This

system was disrupted in the 1990s due to a sharp reduction in budget support and the ban on charging such costs to production costs. The personnel training programme should be based on the prospective personnel plan of the inter-industry complex. This plan should be formed on the basis of perspective plans of business units and take into account changes in personnel requirements and production development forecasts.

Knowledge management plays a special role in meso-economic management. Knowledge is a key resource, but building a knowledge management system is significantly costly. The creation of a system for consolidation of accumulated knowledge and database formation is too complex and expensive task for a single business unit. However, within an entire cross-industry production complex, there are sufficient resources for such a task.

Knowledge management at the meso-economic level, as well as at the level of the individual company, is based on a process approach. The main processes are as follows: identification of key knowledge; gathering of available knowledge; classification of knowledge for its storage and use; formation of flexible databases; ensuring the availability of knowledge and control over its distribution; creation of new knowledge; obtaining additional income due to the transformation of knowledge into intellectual capital [4].

The possibility to use the considered elements of meso-economic management by inter-branch production complexes provides additional competitive advantages both to each business unit and to the complex as a whole.

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