

## SOME ASPECTS OF POPULAR SCIENTIFIC LITERATURE IN TEACHING A FOREIGN LANGUAGE

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### ABSTRACT

*The article analyzes the possibilities of using literary texts in English lessons in non-linguistic faculties of universities. The linguistic approach, the principles of selection of literary texts are considered, the meaning of pre-text, pre-text and post-text work is revealed. In addition, the article examines the possibility and necessity of using foreign-language popular science texts in teaching a foreign language to first-years students of non-linguistic faculties of universities, as well as characterizing the style of scientific and popular science literature in English. Moreover, various aspects of popular science text have been investigated in comparison with other types of scientific literature.*

**KEYWORDS:** *Reading, Speech Activity, Literature, Literary Text, Linguistic Approach, Work On The Text, Popular Science Literature, Learning Process, Scientific Information, First-Year Student, Vocabulary, Terminology, Non-Linguistic Faculty, Emotionality, Grammatical Structure.*

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### INTRODUCTION

Everyone who studies a foreign language must first of all master the vocabulary of this language, that is, the vocabulary necessary for communication in a foreign language. The main focus should be on enriching their speech with new words and expressions, prepare for communication, teach speech skills, and achieve correctness, clarity and consistency in speech. This is facilitated by reading literary texts.

The selection of literary texts for teaching a foreign language is a multi-stage process, and it decisively depends on how what criteria are used by teachers. For example, some teachers consider literature only works of great authors of the past, others, however, evaluate works depending on the ideological content. Third select excerpts from the work that correspond to a particular topic being studied. Important selection criteria are compliance with the lexical complexity of the text the level of language training of students.

An important point in the development of technology for teaching a foreign language to students of non-linguistic faculties of universities is the selection of the most optimal type of literature. Recently, with the modern mass character of scientific research and the enormous interest in the problems of science on the part of society, the use of popular science literature, which is a transitional step to scientific literature, has become increasingly important in the process of teaching a foreign language to first-year students of non-linguistic faculties of universities.

To date, studies of popular science text, in our opinion, are rather few in number, despite the fact that this specific genre is in demand and significant. This significance is determined by the fact that it is that "bridge" between special literature containing a large amount of scientific information, and non-specialists, who have a need to familiarize themselves with this information.

This "bridge" is intended to convey complex theoretical material to the addressee in an accessible and interesting form. In this regard, it is usually believed that the purpose of popular science presentation is to familiarize the non-specialist reader with scientific data using certain techniques of popular knowledge processing. These techniques are necessary in order for the achievements of advanced science to be presented in the form that is most accessible to readers and would correspond to their level of knowledge.

As a special substyle, popular science speech is characterized by the fact that the achievements of science and technology are covered in such a way that they become understandable to a layman who is still is a first-year student. In popular science style text the author refuses the complex mathematical apparatus, detailed proofs, illustrative examples are introduced into the text, analogies, comparisons. Having studied the subject, purpose and reader's address of popular science literature, N.Z. Ryabinin defines it as "a set of literary works, containing information about theoretical and / or experimental research in the field of science, culture and applied activities, serving to disseminate scientific knowledge for the purpose the formation of a materialistic worldview and set out in an accessible for a layman in this field of knowledge form" [9, 8].

Popular science literature is not significantly different only from fiction, but also from science-fiction and science-fiction literature. She is closest to scientific, designed for a narrow circle of specialists well trained in this field. The common object of reflection of scientific and popular science literature is science in all the diversity of its content, while scientific and artistic and sci-fi literature presupposes the presence of the author's fiction, the characters are carrier's ideas of the author, their thoughts, and actions.

## **MATERIALS AND METHODS**

Science fiction is close to science fiction, although, unlike the latter, it presents scientific ideas and the phenomena in their existing form and not in the form of the fantastic at this stage, but scientific in their essence, foresight.

Consequently, "popular science, science fiction and science fiction literature has in common the subject of description - science. However, in popular science literature science is an actor, while in science fiction and science fiction literature, science appears as an object of study for the

characters, and scientific problems and ideas - as objects of quest for the hero or other characters” [2, 12].

In order to determine the possibility of using popular science texts for teaching 1st year students in the specialty "Ecology", the views of the authors were generalized, considering in their works the problems of teaching reading popular scientific literature [4, 5, 7, 8, etc.], after which we have established ourselves in the opinion that the interest of practicing researchers in popular science texts is based not so much on amusement their content or artistic merit, how much, first of all, on the scientific value, novelty of the material, originality of thought, practical usefulness for the work of students.

It is known that reading such literature is the most accessible a means for obtaining scientific information.

M.D.Gorodnikova, N.I.Suprun, E.V.Fegon and others also believe that popular science literature is a link between a specialist scientist and a non-specialist [4].

According to L.N.Pisareva, “the works of popular science literature are based on the factual data of science and speech means inherent in this functional style speech” [8, 4–5].

Describing the style of scientific and popular science literature in English, we rely on the data provided I.R.Galperin [2]. He notes that the style of scientific literature is not characterized by imagery; therefore it is rarely possible meet metaphors, metonymy, hyperbole, comparisons, etc.

In general, we can say that emotionality is not inherent in in principle, the language of science, but it is possible in it depending on theme or nature of the essay. So, the humanities are more predisposed to emotional presentation than accurate.

In popular science literature, quantitative expressiveness prevails: *very far from conservative, much less limited, almost all of which, very effective, much the same, most essential, very diverse sorts, long before the war.*

Expressiveness sometimes consists in indicating the importance stated. Boolean underscore could be, for example expressed lexically:

*Note that...*

*I wish to emphasize...*

*Another point of considerable interest is...*

*An interesting problem is that...*

*Just imagine that...*

Expressiveness is also expressed in the implicit or explicit statement of the sender of speech for the objectivity and reliability of the reported.

A.I.Novikov, I.V.Bogoslovskaya believe that “the author must find a way to reduce the level of abstraction in a popular science text to a minimum and enable the reader to present the essence of scientific ideas in the form of thinking that is ordinary for him” [7, 352]. In this regard, the popular text involves a combination of scientific and entertaining, which provided by the fact that scientific facts are presented in a figurative associative form. Sometimes it is to a certain

extent brings together a popular science text with a literary one. Due to the use of some elements of artistry, scientific information is perceived easily and simply. Imagery and brightness, simplicity and accessibility, concreteness and detail as stated - these are the signs of popularity.

The selection of vocabulary is subject to one main task: to adequately convey to the reader the phenomenon being described, so the words, used to express thoughts in scientific prose, have usually the leading, subject-logical meaning.

Many methodologists have dealt with the issue of the lexical composition and grammatical design of popular science texts in English, pointing out that vocabulary of a professional nature should be used in these texts, and the style popular science literature should be characterized by consistency, which requires the use of the most economical syntactic means.

On the features of the grammatical structure of the scientific prose in general I.R. Galperin writes that "from the point of view of the syntactic organization of the sentence, the style of scientific prose is characterized by a precisely defined system of allied connections arising from a strict, logically consistent system of presentation. In the style of scientific prose, logical syntax finds its most vivid expression, in contrast to the emotional syntax of artistic speech" [2, 230].

V.M. Morgulis [6] analyzes texts on architecture and comes to the conclusion that works in a particular specialty are not one specific style of presentation is necessarily inherent - articles can be written in a business style, in a journalistic style, and in an artistic style. However, certain stylistic features (both syntactic and lexical) can be traced in the texts for each specific industry. She further concludes, that translation of such special texts requires a particularly good knowledge of the following grammatical topics: 1) the tenses of the English verb in the active and passive voice; 2) impersonal forms of the verb; 3) word order in an English sentence; 4) the most common forms of syntactic composition and submission of proposals; 5) prepositions and their functions.

The desire to indicate real objects, to operate with things leads to the predominance of the ecological orientation of nominal structures in the English popular science text, to its characteristic nominative character. The point is not only that in such texts there are many names of real objects. Research has shown that such texts nominalize and descriptions of processes and actions. Instead of saying *to clean after the welding*, the specialist says *to do post-welding cleaning*; if it is necessary to indicate that the particle is near the nucleus, they say *it occupies a justanuclear position*; instead of *the contents of the tank are discharged by a pump*, preference is given to *Discharge of the contents of the tank is effected by a pump*.

Due to the fact that the function of the real description of the action is transferred to the name, the predicate in the sentence becomes only a general designation of the procedural, a kind of "operator" at the name.

In popular science texts of ecological orientation there is a wide use of such verbs-operators, as *effect, assure, perform, obtain, provide, give, involve, entail, imply, result in, lead to, to be ascribed to, to be attributed to etc.*, value and the translation of which depends entirely on nouns that carry the main meaning of the sentence.

The desire for the nominative also leads to the replacement of adverbs prepositional-nominal combinations. So, *accurately* becomes *with accuracy*, *very easily* - *with the greatest ease or the easy way* (*Compare: to do something the hard way*), etc.

Stubbornly resisting this trend only intensifying adverbs that appear in popular science texts as the main modal-expressive means that do not look like an alien element in a serious presentation. These are the adverbs: *clearly, completely, considerably, essentially, fairly, greatly, significantly, markedly, materially, perfectly, positively, reasonably*.

For example: *The amount of energy that has to be dissipated is clearly enormous.*

*The energy loss is markedly reduced.*

The predominance of nominal rather than verbal constructions in the scientific style allows for greater generalization, eliminating the need to indicate the time of action: *when we arrived, at the time of our arrival, when we arrive*.

For the same reason, in the scientific style, a marked preference given to the passive, where the doer is optionally indicated, and to the impersonal forms of the verb. Instead of *I use the same notation as previously they write: The notation is the same as previously used*.

In connection with the above-noted consistency and evidence of the scientific presentation, there is also an increased use of cause-and-effect unions and logical connectives like *since, therefore, it follows that, so, thus, it implies, involves, leads to, results in, etc.*

A scientific text is characterized by an abundance and variety of conjunctions and union words, especially double ones: *that, and that, than, if, as, or, nor, not merely...but also, whether...or, both...and, as...as*. Also there are unions such as *thereby, therewith, hereby*, which have already become archaisms in fiction.

Word order in scientific texts is predominantly straight. Rare exceptions are due to the need for a logical connection.

Consider the following passage: *The effectors may be electrical motors or solenoids or heating coils or other instruments of very diverse sorts. Between the receptor or sense organ and the effector stands an intermediate set of elements* [8, 42–43].

The inversion in the second sentence serves to provide logical connection with the previous one.

An important role in revealing the logical structure of the whole is played by division into paragraphs. Each paragraph usually starts with a key sentence that expresses the main idea. For strengthening the logical connection between sentences, special stable expressions are used: *to sum up, as we have seen, so far we have been considering*. Adverbs can serve the same purpose: *finally, again, thus*. Their use in a scientific text is specific, that is, it differs greatly from its use in fiction.

Regarding the lexical side of popular science texts by E.P. Shubin [10] notes that the system of teaching reading foreign language texts can be effective only if it is based on a preliminary selection of ready-made signs of all orders to be assimilated.

So, according to V.Meka, it is necessary to teach not all lexical units that exist in the language, but only selected ones, because "the student often strives to memorize the twelve thousand words to understand only one thousand" [11, 161].

Characteristic features of popular science text are informative (meaningful), logical (strict sequence, clear connection between the main idea and details), accuracy and objectivity and resulting from these characteristics of clarity and comprehensibility.

## RESULTS

Non-fiction is non-fiction in the full sense of the word. In its content and stylistic features, it closely adjoins scientific literature. The subject of description in the works of these genre scientific facts, phenomena, discoveries are themselves. Popular science literature is characterized by terminology, as well as logic, which requires the use of the most economical syntactic means, which in turn impart certain uniformity to popular science texts.

In contrast to the scientific literature intended for a narrow circle of specialists, popular science literature is designed for a wide range of readers, often not well trained in this field.

Popular science literature has developed a special style of presentation of scientific material. If the author is facing the task is to acquaint a completely unprepared reader with this or that scientific phenomenon, which is a first-year student, then everything is told about the phenomenon from the very beginning, to lead to what is the subject of the presentation. If the author writes for a reader prepared to some extent, then the story focuses on what is directly the topic of the article, book, etc. In both cases, the narration is conducted in the form of a fairly simple and entertaining and it depends only on the talent of the author how fully the main idea is covered.

Popular science literature is characterized by imagery of presentation, which, however, differs from the imagery adopted in fiction. Imagery is present not so much in the description of the phenomenon or fact itself, although this is sometimes possible, how much in relation to the author to the described fact or phenomenon.

## DISCUSSION

The scope of the scientific style is very wide. it's one of styles that have a strong and versatile influence on literary language. The scientific and technological revolution that is taking place before our eyes is introducing into general use an enormous number of terms. If earlier explanatory dictionaries were compiled on the basis of the language of fiction and to a lesser extent degree of journalism, now the description of the developed languages of the world is impossible without taking into account the scientific style and its role in the life of society.

As I.V.Arnold, the most conspicuous, but not the only feature of this style is the use of special terminology. Each branch of science develops its own terminology in accordance with the subject and by the method of his work [1, 78].

M.D.Gorodnikova, N.I.Suprun, E.V.Fegon and others argue that among the elements of the semantic structure of popular science texts, terms occupy a leading place, becoming the "core of thematic chains" [4, 84].



So, when describing the most superficial characteristics, to for example, factors of animate and inanimate nature, to the fore terms are put forward - designations of the corresponding concepts of sciences. MM.Glushko states that “a term is a word or a phrase for expressing concepts and designating objects, which, due to its strict and precise definition, has clear semantic boundaries and therefore is unambiguous within the corresponding classification systems” [3, 33].

As terms, both words used almost exclusively within the framework of this style, and special meanings of common words. Such, for example, lexical units as *breeder reactor*, *carbon dioxide*, *desalination plant*, *leaching*, etc., widely used in texts on ecology, are difficult to find outside of such texts. At the same time in these texts act as terms and such words as *dead*, *degeneracy*, *ripple*, *life expectancy*, *smoke*, etc., having well-known commonly used values.

## CONCLUSIONS

Popular science literature should be given preference when reading if the purpose of reading is the ability to obtain the necessary information in the shortest way (in the case when scientific literature is not yet within the power), and also if another purpose of reading is to prepare for reading scientific literature, since popular science literature most of all adjoins it.

Terms should provide a clear and precise indication of real objects and phenomena, establish an unambiguous understanding of the transmitted information by specialists, therefore, to them there are special requirements. The term must be part strict logical system. The meanings of terms and their definitions must obey the rules of logical classification, clearly distinguishing between objects and concepts, avoiding ambiguity or inconsistency. And, finally, the term should be a purely objective name, devoid of any secondary meanings that distract the attention of a specialist, introducing an element of subjectivity.

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