

O POUČAVANJU PREFIKSA U TEHNIČKOM ENGLESKOM JEZIKU

ON PREFIXES IN TECHNICAL ENGLISH

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SAŽETAK

Učenje vokabulara ključno je za usvajanje stranog jezika. U nastavi jezika struke stoga je prvenstveno naglasak na stručnoj terminologiji. Usvajanje prefiksacije dio je tog procesa, i to iz više razloga. Provedena istraživanja pokazala su da teoretsko poučavanje o prefiksima vodi ka boljem usvajanju vokabulara nego memoriziranje novih riječi jer dolazi do povećanja razine metajezicične svjesnosti. Naime, nakon što studenti usvoje pravila za jezično korištenje tj. rastavljanje riječi na manje razumljive dijelove kako bi se odgonetnulo ukupno značenje riječi, usvajanje novih riječi je efikasnije. Poznato je dakle da prefiksi imaju značenje, što znači da ukoliko studenti nauče određen broj prefiksa, tada mogu samostalno odgonetati nove nazive u tehničkom engleskom jeziku. U radu se izlaže prikaz dosadašnjih istraživanja koja objašnjavaju na koji način učenje prefiksa pospješuje obogaćivanje vokabulara, te se potom izlažu različiti zadaci za njihovo uvježbavanje. Cilj poučavanja prefiksa je osposobiti studente za samostalno izvođenje značenja novih riječi pri samostalnom čitanju tehničkih tekstova.

Ključne riječi: nazivlje, metajezicična svjesnost

ABSTRACT

Learning vocabulary is an essential part of mastering a foreign language. Therefore, in ESP the emphasis is on mastering terminology. Acquisition of prefixes is a part of that process for many reasons. The studies that have been

carried out have shown that gaining theoretical prerequisites on prefixes results in a better acquisition of vocabulary as opposed to memorizing new words, which leads to a higher level of metalinguistic awareness. After the students get the instructions for their use, they are able to break down words into smaller meaningful parts in order to decipher the overall meaning of a prefixed word. It is known for a fact that prefixes bear meanings, which implies that if students learn a number of prefixes, then they are able to decode the meanings of new terminology once on their own. In this paper, the most frequent prefixes in technical English as well as different activities for their practice are given. The goal of teaching prefixes is to enable students to confidently infer unknown meanings during independent reading of English technical texts.

Keywords: terminology, metalinguistic awareness

1. UVOD

1. INTRODUCTION

The aim of this paper is to review studies that have sparked interest in this topic and illustrate how prefixes are used in teaching technical English.

In teaching prefixes in general language, using affixes is one of the most popular strategies for enriching vocabulary [1, 2].

A prefix is an affix, most often derived from a preposition, placed before the word stem [3], which alters the word's meaning. In other words,

prefixes convey meanings. Prefixes can indicate number, opposition, place, time, manner and many other meanings, as will be shown below [4], for instance:

Word stem	Prefixes word	Meaning type
possible	impossible	Opposition
payment	non-payment	Negation
war	pre-war	Time
terrestrial	extraterrestrial	Place
cook	overcook	Manner

Prefixes originate from Latin (e.g., *pre-*, *ob-*, *ex-*, *de-*) and Greek (e.g., *anti-*, *sin-*, *bio-*, *chron-*). Consider the example of the English term *geometry*: the prefix *geo* refers to *the Earth*, while *metria* means *measuring*; thus the term denotes *the science of measuring the Earth*. Students learn new terms by associating them with familiar prefixes. It is important for teachers to cover common prefixes during lessons, explaining their meanings and how they combine with stems to form new terms.

Numerous studies examine the benefits of teaching prefixes in English, for example:

- Teaching prefixes leads to vocabulary enrichment and morphological awareness development, accelerating new word acquisition [5, 6].
- Learning prefixation aids better memorisation of new words [7, 8].
- A study conducted from the first to third year of studies showed that knowledge of affix combinations contributes to reading skill development, as students successfully guess meanings of unknown words [9].
- A study comparing students' ability to acquire new words without dictionary use found that those who received theoretical affix instruction during lessons did so most effectively [10].

Morphological awareness is part of metalinguistic awareness, relating to a language user's abilities—someone with high metalinguistic awareness can categorise word types, shift focus from form to function and ultimately to meaning, and explain a word's role in a sentence [11].

Therefore, numerous papers address the benefits of teaching prefixes, as well as the teaching of prefixes in general language [12], [13]. Teaching prefixes in general language begins with explaining their meaning, followed by recommending various tasks for practice, such as listing words formed with prefixes, matching prefixes and bases, practising writing prefixes, and similar activities, with tasks depending on the students' age. In contrast, regarding technical English, there are no papers dealing with this topic, which does not mean that teaching prefixation is unimportant. On the contrary, observations from teaching practice indicate that teaching prefixes leads to better memorisation of new terms. Furthermore, by raising awareness of prefixation, i.e. word formation, students can independently decipher the meanings of new terms, which is a significant challenge for them. This is possible if the teacher introduces the most common prefixes and students practise combining prefixes and bases or word roots into new terms through a series of tasks. This paper contributes in that direction. The aim of the practical part of the paper is to present prefixes frequent in technical English and to demonstrate how new terms are formed with them through different types of tasks.

2. POUČAVANJE PREFIKSACIJE

2. TEACHING PREFIXATION

Based on all the presented advantages, it has been decided to include prefixes as part of the technical English course. The prefixes discussed in this paper are taken from technical texts across various engineering disciplines covered in class, as they are considered particularly useful for students in their further independent vocabulary learning.

The first introductory task aims to demonstrate how the meaning of a word changes when different prefixes are added. Students are asked to underline prefixes in words and match them with their meanings. The teacher then explains that prefixes have specific meanings – if students learn a certain number of prefixes, they will be able to independently decipher the meanings of new terms encountered in technical English classes.

I Underline prefixes and match them to their meanings:

1 misuse	a) use too much
2 abuse	b) use something in the wrong way
3 overuse	c) use something for a bad purpose
4 reuse	d) use again

An example of a prefix in civil engineering terminology is then presented, such as *overpass* and *underpass*, which clearly demonstrate how changing the prefix alters the meaning. The same applies to the examples *download* and *upload*. Students are encouraged to recall as many terms as possible that have been formed by prefixation, whether from general English or technical language. The teacher provides prefixes such as *geo, hydro, mono, micro, cyber, re, de, dis*, etc.

After the initial clarification, students are given various words containing prefixes. Their task is to identify the prefixes and explain in English what those words mean.

II Underline prefixes in the terminology below! Explain the words in English.

geometry	cybertruck
microchip	preview
hydroelectric	pseudoscience
counterclockwise	aeronautics
automatic	irrelevant
precast concrete	pneumatic cylinder
anti-allergenic	agricultural
illogical	biomass
nanotechnology	hydraulics
internet	electromagnet
infrastructure	superconductor

It is now time to link prefixes to their meanings. Based on the words and meanings from the previous task, students determine the meanings of the given prefixes. Different meanings are offered, and they write down the correct prefixes:

III Match the prefixes with their meanings:

- 1 connected with the earth _____
- 2 connected with water _____
- 3 below/ under _____

- 4 connected with air _____
- 5 done by yourself _____
- 6 related to computers _____
- 7 connected with farming _____
- 8 false _____
- 9 number one _____
- 10 opposite of _____
- 11 between/ among _____
- 12 do before _____
- 13 extremely small _____
- 14 related to life _____
- 15 do before _____
- 16 one billionth _____
- 17 air/ gas _____
- 18 related to electricity _____
- 19 above, beyond _____

In the following task, students create new words by adding a prefix to the correct word. Let us look at the task:

IV Now match these prefixes with the following terminology to get new words:

- 1 _____ processor
- 2 _____ attack
- 3 _____ logy
- 4 _____ power
- 5 _____ drome
- 6 _____ nomy
- 7 _____ security
- 8 _____ poly
- 9 _____ heat
- 10 _____ degradable
- 11 _____ nomous vehicle
- 12 _____ view

In prefixation practice, students are encouraged to work independently or in pairs, depending on their preferences. The teacher provides the correct answer and explanation at the end if needed, for example: *microprocessor, counterattack, hydrology, hydropower, aerodrome, cybercode, irresponsible, disbalance, antithesis, monopoly,*

preheat, biodegradable, autonomous vehicle, preview.

Next are prefixes that create opposite meanings. Students practise by inserting a prefix in front of a word to form words with opposite meanings.

V Insert the following prefixes before the words: *im/ir/il/a/dis/un/anti/counter/in/de.*

- 1 _____ permeable
- 2 _____ do
- 3 _____ balance
- 4 _____ connect
- 5 _____ bacterial
- 6 _____ oxidant
- 7 _____ legible
- 8 _____ assemble
- 9 _____ competent
- 10 _____ clockwise
- 11 _____ continue
- 12 _____ agree
- 13 _____ bug
- 14 _____ responsible
- 15 _____ thesis
- 16 _____ activate

The solutions are as follows: *impermeable, undo, disbalance/imbalance, antibacterial, antioxidant, illegible, disassemble, incompetent, counterclockwise, discontinue, disagree, debug, irresponsible, antithesis, deactivate.*

In the following task, prefixes that denote numbers are practised. These prefixes are: *mono – one, bi – two, tri – three, multi – more, poly – more.* Students use them to form new words and are required to explain the word in English. If they have any other examples, students may add them.

VI Match the prefixes that denote numbers with the offered words: mono-, bi, tri-, multi-, poly-

- 1 _____ lingual
- 2 _____ glot

- 3 _____ metal
- 4 _____ axial
- 5 _____ lateral
- 6 _____ gon
- 7 _____ -story building
- 8 _____ directional
- 9 _____ weekly
- 10 _____ chromatic
- 11 _____ ester
- 12 _____ graph
- 13 _____ carbonate
- 14 _____ angle
- 15 _____ national
- 16 _____ centenary
- 17 _____ plication
- 18 _____ fold door
- 19 _____ lane

The solutions are as follows: *bilingual, polyglot, bimetal, triaxial, equilateral, polygon, multi-storey building, bidirectional, biweekly, monochromatic, polyester, polygraph, bicarbonate, triangle, multinational, bicentenary, multiplication, bifold door, multilane.*

As already mentioned, metalinguistic awareness is the ability to think about language, its use, and knowledge of linguistic structure. To consolidate the material and enhance metalinguistic awareness, the next step is to classify the prefixes learned so far according to whether they denote a number, opposition, or another meaning. Examples of words are entered into the table, e.g.:

VII Classify the prefixes into the table below:

Prefixes that denote numbers	Prefixes that create opposites	Other prefixes with meaning
monorail	disassemble	preheat

In the following task, prefixes with different meanings are practised. First, students must match each prefix with its correct meaning. Then, in the sentences that follow, they must form a new word that fits the context of each sentence. The teacher provides the first example: the prefix *re*, which means *do again*. For example, combining the prefix *re* with the word *construct* gives *reconstruct* – *to construct again*. The meaning changes in the same way in the following examples: *reinforce*, *rebuild*, *relocate* (a building), *reboot*, *reload*, *reprogram*, *reset*. The missing words are not given to the students; instead, based on the context of each sentence, they should recall which word fits and combine it with the appropriate prefix from the table.

VIII Other prefixes with meaning. Match the prefixes and their meanings: the same, under, related to nature, do again, electronic, do too much, do wrongly, over, higher in quantity, half

1	bio	
2	re	
3	mis/ mal	
4	equi	
5	semi	
6	over	
7	super	
8	sub	
9	under	
10	hyper	
11	e	

After that, the following sentences are completed using the prefixes from the previous task. Let's look at the examples:

IX Now come up with the correct the words and prefixes that fit the sentences below:

- 1 Point A and B are _____ from point C.
- 2 We need to _____ that gadget to make it work again.

- 3 Before welding, you need to _____ the surface.
- 4 An _____ is a bridge by which a road passes over another.
- 5 An _____ is a road passing under another road or railway.
- 6 _____ is used to describe things that move faster than the speed of sound.
- 7 _____ refers to organic matter used as a fuel.
- 8 A state in which opposing forces are balanced is called _____.
- 9 _____ means to form too high opinion of somebody.
- 10 _____ means to speed up again.
- 11 _____ means to heat too much.
- 12 _____ is a type of smooth curve lying in a plane.
- 13 _____ is intermediate in electrical conductivity between a conductor and an insulator.
- 14 A triangle with three equal sides is called an _____ triangle.
- 15 Who is the _____ of your thesis?
- 16 Could you please send me your _____ so that I can send you the book.
- 17 A mile is _____ to about 1.6 kilometres.
- 18 We need to report the _____ of the printer. It won't work.
- 19 There is a _____ between the worker's skills and the actual jobs that are available.
- 20 If you have more knowledge and skills for a particular job, it means you are _____.
- 21 A structure _____ is the process of moving a structure from one location to another.

The solutions are as follows: *equidistant, recharge/ reassemble, preheat, overpass, underpass, supersonic, biomass, equilibrium, overestimate, reaccelerate, overheat, hyperbola, semiconductor, equilateral, supervisor, email, equivalent, malfunction, mismatch, overqualified, relocation.*

Next is a short task for practising the prefix sub-. Students are asked to match the words with their meanings.

X Match the terminology with the definitions: subcontractor / subordinate / submarine / subway / subdivision / substructure

1	a passageway under the ground	
2	a person who is under someone else in rank or importance	
3	a watercraft that stays under water	
4	underground part of a building	
5	a company that does part of the work at the construction site	
6	the act of dividing something into smaller parts	

At the very end, students must match prefixes with the given words to form new names that fit the context of the sentences.

XI Match the prefix with the correct word to fill in the sentences below.

tri de re dis semi bi
anti equi mono under multi
un in ir im
assemble angle organised charge
lateral accelerate circle distant
freeze graduate

- 1 My battery is low. I need to _____ it.
- 2 If you slice a circle, you get a _____.
- 3 _____ is a substance that we pour into cars during winter.

4 All the points on the perimeter are _____ from the centre of the circle.

5 A _____ is a shape that consists of 3 sides.

6 An _____ triangle is a shape that consists of 3 equal sides.

7 Don't accelerate. Do the contrary – _____!

8 Your working place is such a mess. You're so _____.

9 We need to _____ this device if we want to see how it functions.

10 We are doing _____ studies in civil engineering.

The solutions are as follows: *recharge, semicircle, antifreeze, equidistant, triangle, equilateral, decelerate, disorganised, reassemble/ disassemble, undergraduate.*

3. ZAKLJUČAK
3. CONCLUSION

Research presented in the paper indicates various benefits of learning prefixes in general English. Given the importance of acquiring new terminology, frequent prefixes are also included in teaching English for specific purposes. Teaching practice in technical English has shown that students eagerly learn prefixes, as this enables better understanding of new terms and allows independent vocabulary enrichment. Therefore, prefixes constitute a relevant topic in technical English teaching. As shown in the paper, there are several types of prefixes, each with a specific meaning. Based on their knowledge of prefixes, students are able to create new words and terms, which is a motivating process. The different types of tasks presented in the paper gradually guide students through the process of mastering prefixes, and this new knowledge equips them for independent learning of new terms in the future. It is considered that teaching prefixes leads to increased metalinguistic awareness, and the paper demonstrates how to achieve this.

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