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ANGLICKO-ČESKÝ TECHNICKÝ SLOVNÍČEK: PŘEKLAD, ANALÝZA A ELEKTRONICKÉ ŘEŠENÍ

ENGLISH-CZECH ENGINEERING GLOSSARY: TRANSLATION, ANALYSIS, ONLINE SOLUTION

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Cílem práce je vytvořit anglicko-český slovníček k učebnici Cambridge English for Engineering, používané v kurzech XAEI a HEFE. Student vybere technickou slovní zásobu z dané učebnice, přeloží tyto výrazy do češtiny a teoreticky překlad zanalyzuje. V další části práce student udělá rešerši dostupných elektronických nástrojů, z nichž jeden vybere pro realizaci výsledné učební pomůcky.

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ABSTRAKT

Moje bakalářská práce je zaměřena na tvorbu Anglicko–českého slovníčku k předmětu HEFE (a také XAEI). V práci jsou také vysvětleny pojmy *lexikografie*, *slovník* a jeho druhy, dále termín *slovo* a dělení slov do slovních druhů. Závěrečnou část tvoří analýza tvorby slovníčku, kde je popsáno, jak byla slova překládána a jaké zdroje byly ke konkrétnímu překladu použity. V závěru práce je zpracováno elektronické řešení technického slovníčku.

KLÍČOVÁ SLOVA

Lexikografie, slovník, dvojjazyčný slovník, překlady, technický slovník, elektronický slovník, slovo

ABSTRACT

My bachelor thesis deals with the English–Czech dictionary for subject HEFE (and also XAEI). Terms *lexicography*, *dictionary* and dictionary division, terms *word* and *classes of words* are explained in this thesis. The second section describes process of creation of dictionary. The procedure how the words were translated and sources, which were used to translations, are also described in the third part. An electronic solution to technical glossary is in the end of the thesis.

KEYWORDS

Lexicography, dictionary, bilingual dictionary, translation, technical dictionary, electronical dictionary, word

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V Brně dne

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V Brně dne

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Dita Dvořáková

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1. INTRODUCTION

This bachelor thesis deals with vocabulary for subject English for Electrical Engineering Course (HEFE) that is taught at Brno University of Technology, Faculty of Electrical Engineering and Communication. It is also useful for students of the subject XAEI, which is similar to HEFE. Study of these subjects is not easy and a lot of students have problems with new terms in the field of technology. Furthermore, the basic vocabulary of this subject is frequently used in other subjects, too.

The first part is dedicated to the introduction of topic of thesis. Afterward follows a section focused on especially on key concepts used in this discipline, namely terms *word*, *dictionary* or *glossary*. Also, a discipline similar to lexicography - *lexicology* - is clarified there. The third part is the bilingual English-Czech dictionary of the textbook *Cambridge English for Engineering* by Mark Ibbotson. The selection of words from the textbook depends on author's of thesis opinion. However, the most important criterion is their placement in *Anglicko-český technický slovník*. Other words are classified according to their location in *Academic Word List* by Dr Averil Coxhead. There is the list of headwords and other words related to them, there are over 3 000 words in total. Language level of textbook is B1/B2, it means that the dictionary contains words of this level or higher. The last criterion is at author's discretion if the words will or will not be important for further English studies.

The fourth part is about the method of translation and the evaluation of resources' authenticity. The goal of this part is the analysis of translated words that are selected from the exercises in the given units. Three different types of dictionaries were used for translation and in some cases they are compared with Internet dictionaries.

The reason why some words can cause problems for students, is explained in this chapter, too. In other words there the procedure of lexicographical work is clarified.

The penultimate part is about an electronic solution of the dictionary. The author attempts to find the optimal electronic dictionary (and it can be used also as a study program) for students. This part describes a principle of operation and evaluation each of the three suggested applications. The whole dictionary will be accessible to students with the aid of phone and web applications. Of course, the solution for computer users was also suggested.

2. THEORY OF LEXICOGRAPHY

2.1. Definitions of lexicography and lexicology

The aim of this bachelor thesis is to create a dictionary. Sciences, which are concerned with creation of dictionary, are called lexicography and lexicology. Before we continue with other definitions, we need to explain these terms in great detail.

The word *lexicography* is related to the Greek word *lexiko* (adjective from *lexis* meaning *speech*, or *way of speaking* or *word*) plus *graph* - *writing* (writing of words). It is the writing of the words in some concrete form - in the form of the dictionary. (Singh 1)

This term is not clearly explained. Different sources explain *lexicography* in another way. A definition, which is appropriate, might be “the principles and practices of dictionary making”. (“Lexicography”)

A person who creates a dictionary is a *lexicographer*. Before he or she starts to create a new dictionary, she or he should ask some questions. Who will use the dictionary? For what purposes will it be used? The lexicographer compile the dictionary with regards to answers to these questions.

Lexicology and *lexicography* are closely related and have the same base word – *lexiko*. It means that both of them are connected with words. *Lexicology* is compound of two words: *lexiko* and *logos*, which can be interpreted as science, alternatively learning. In a simplified way, it can be explained as a study of *lexis*. It is not only about words themselves, but it is also focused on origins of words (i.e. etymology).

2.2. Dictionary

2.2.1. What is a dictionary

The most used word in my thesis is a *dictionary*. Dictionaries are designed to provide information about words. Most people imagine them as the book that helps to translate unknown words. They also know, how to use a dictionary and how to understand it. However, how to explain this term more professionally? There is not an

unambiguous definition. For instance, Oxford dictionary defines *dictionary* as “A book or electronic resource that lists the words of a language (typically in alphabetical order) and gives their meaning, or gives the equivalent words in a different language, often also providing information about pronunciation, origin, and usage.” (“Dictionary”)

It was only one of the ways, how this term can be described. Jackson Howard describes the term in another way: “Dictionaries are reference books. People consult them to find out information about words. We must assume that compilers of dictionaries – lexicographers – include information that they know or expect people will want to look up. What we cannot assume, however, is that lexicographers will exclude information that they might expect users will not want to look up. A dictionary is more than just a reference book; it is also a (partial) record of the vocabulary of a language.” (22)

This XAEI/HEFE dictionary corresponds more to the definition from *Oxford dictionary* than Howard’s. It is *only* list of English words that gives us equivalent in Czech language.

2.2.2. What is in the dictionary

In general, people think that in the dictionary there is a list of linguistics abbreviations, words in source language in the alphabetical order and their equivalents in the target language. Sometimes there are sections dealing with grammar.

The dictionary consists of two or three parts – the front matter, the body and the appendices (some dictionaries are without them).

The front matter

It is the first part of the dictionary. Title page, introduction, explaining of innovations and characteristics of the edition concerned, together with a guide to using the dictionary are included in this part of the dictionary. Occasionally, the list of abbreviations might be there.

The body

In this section you can find an alphabetical list of *headwords* (also called the *citation form* or the *entry word*). This term is explained in the following paragraph.

Entry word (Headword) – “It is the head of the entry, usually the canonical form of the relevant lexeme; the expression to which most of the information in the entry relates; also an address to multi-word lexemes, of which it is a constituent; usually distinguished typographically, e.g. by larger typeface.” (Piotrowski 16)

Appendix

Appendix is defined in many ways, there is used a definition from the Internet dictionary: “It is supplementary material at the end of a book, article, document, other text, usually of an explanatory, statistical, or bibliographic nature.” (“Appendices”)

2.2.3. Types of dictionaries

Dictionaries are categorised according to different types of criteria, such as arrangement of headwords or purpose. A division, which is based on the number of languages, is described in more detail below.

Lingual dictionaries can be divided into 2 groups, based on the number of languages – *monolingual* and *bilingual*. A typical feature for each of them is explained in this section.

Monolingual – in other words *unilingual*. “They are dictionaries in which the language of description is the same as the language being described; the microstructural information is given in the language from which the entry-words are drawn.” (Stark 14)

“Users of monolingual dictionaries may equally well have either passive decoding needs or active encoding needs when resorting to their favourite dictionary.” (Sterkenburg 231)

Bilingual – sometimes called as *translation dictionary*. „A dictionary that defines a selection of the vocabulary of two languages, usually each through the other.” (Stark 13)

2.2.4. Specialised dictionaries

The specialised dictionaries are divided into five groups on the basis of the nature of their word lists

- Their covering of special geographical regions, social dialects or special spheres of human activity

- Their formal shape
- Their semantic aspect and their relational value in the lexical stock of the language
- Their collocational value
- Special language units and others.

(Singh 19)

The first group comprises dialects, special profession, arts and crafts, slang, jargons and also technical terms - *glossaries*. In the next parts of thesis they will be explained in great details.

2.2.5. Technical dictionaries – glossaries

The following term glossary is also used in this thesis. This type is used in the final part of the textbook for HEFE or XAEI.

Glossary is a list of words with definitions which are used in a textbook. In a way, it is a kind of monolingual dictionary. The glossary was useful in creating English-Czech dictionary for subject English for engineering. There were words with a lot of Czech translations in the technical dictionary by Elman and Michalíček and glossary facilitates the selection of translation.

Hartman and James said that glossary is “A type of reference work devoted to the description of the technical language of specialized subject discipline. As the ‘technicality’ of a field varies according to the expert knowledge of the user. Such dictionaries can display a wide a range of formats.” (Hartman and James 63)

Ram Adhar Singh, author of *An introduction to lexicography*, interprets the glossary in another way: “The dictionary of technical terms deals with technical terms in a language. Terminology is a major and vital part of the vocabulary of any language. These dictionaries are generally prepared by special bodies and commissions formed specially for the purpose. They contain either terms peculiar to a particular subject field or general words with special meanings for special fields.” (20)

2.3. Words

2.3.1. Word

If we want to translate a text, we open the dictionary and find an unknown *word*. Most of us know that the *word* constitutes of letters, the *compound* is created by connecting the words; words create sentence and sentences form text. But what is a word in lexicographical meaning? For a definition of this it is necessary to use a lexicological book. There are a lot of possibilities to define this term.

Howard Jackson in his book *An Introduction to Modern English Lexicology* writes about difficulties in definition of *word*. For this one is chosen: “The word is an uninterruptible unit of structure consisting of one or more morpheme and which typically occurs in the structure of phrases.” (59)

2.3.2. Classes of words

The dictionary is a list of words with different classes of words. In this English-Czech learning dictionary only nouns, adjectives, verbs and adverbs are used. More details about classes of words is explained in the text from J. Howard.

“In talking about words, we often need to refer to them by the conventional broad classification into *parts of speech*, or *word classes* as the preferred term now is. Rather than assume that this is general knowledge, as most dictionaries do, we will devote a little discussion to it. [...] Although we have school-based definitions in our minds, such as ‘a verb is a doing word’, words are classified more rigorously largely on the basis of the roles they play in the structure of sentences. English has four large classes, into which most new words go, and four smaller, fairly static classes.” (Howard 6)

4 large classes are described in the following part (Howard 7):

Nouns - are the largest class by far; they represent the animate and inanimate objects that are the participants in sentences as subjects, objects, etc.

Verbs - represent the action, event or state that the sentence is about, and hold the pivotal position in the sentence, determining which other elements need to be present.

Adjectives - occur in front of nouns as descriptive words, as well as after verbs like *be* with a similar function.

Adverbs - a diverse class, in part representing circumstantial information such as time (again, always, sometimes, soon) and manner (clearly, efficiently, quickly, tentatively), in part acting as modifiers of adjectives or other adverbs (quite, somewhat, very), in part forming connections between sentences (however, moreover, therefore).

The four smaller word classes, whose major function is to link the members of the larger classes together in sentence structure, are pronouns, determiners, prepositions and conjunctions.

2.3.3. Meaning of words

Semantics studies the meaning of words. It is possible to find definitions of semantic terms and their meanings in any semantic book.

Based on *Glossary of Semantics and pragmatics*, *lexeme* is fundamental unit of lexical semantics. For instance, the words *speak, speaks, spoken, speaking, ...* represent the same *lexeme*. On the other hand, there is an example with the words *obey* and *disobey* – they are not lexemes. There were added affixes and thus were created new lexemes. (Cruse 99)

“Many words have more than one meaning; they manifest *polysemy*. Ascertaining how many meanings, or *senses*, a lexeme has, and in what order to arrange them are difficult decisions for a lexicographer to make, and dictionaries may differ quite markedly in their analysis.” (Howard 15) As you can see in this dictionary, especially in the part of analysis, there are words with the meaning in various field (it may be in field of biology, physics, medicine, ...).

Monosemy and *homonymy* are other meaning relations between the words. *Homonyms* – words that have the same writing form and pronunciation, but their meanings are different. For instance, *race* (competition in sport) and *race* (group of people). *Monosemy* means that the word is unambiguous, e.g. words such as *aunt* or *lucrative*.

3. ENGLISH – CZECH TECHNICAL DICTIONARY

UNIT 1

ascend, <i>v.</i>	stoupat, vystupovat (vzhůru)
attach, <i>v.</i>	přípevnit, namontovat
avionics, <i>n.</i>	letecká elektronika, letecké elektronické zařízení
component, <i>n.</i>	komponent, složka, součást
core, <i>n.</i>	jádro
descend, <i>v.</i>	klesat dolů, stékat, svažovat se
design, <i>v.</i>	navrhovat, plánovat, sestrojovat
detect, <i>v.</i>	detekovat, objevit, zjistit (vadu)
drifting, <i>n.</i>	vybočení (u lodi)
enable, <i>v.</i>	aktivovat (zařízení), zpřístupnit, uvolnit
enhance, <i>v.</i>	zvyšovat, zvýšit, zlepšit
heavy fuel, <i>n.</i>	těžké palivo
impact, <i>v.</i>	narazit (na sebe), zaklínovat
lightweight, <i>adj.</i>	lehký, z lehkého materiálu
locate, <i>v.</i>	určovat polohu, umístit
maritime, <i>adj.</i>	mořský, námořní
payload, <i>n.</i>	(užitečný) náklad
propeller, <i>n.</i>	lodní šroub
remote, <i>adj.</i>	vzdálený
set out, <i>v.</i>	vytyčovat, rozmístit, rozvrhnout
shallow (water), <i>adj.</i>	mělký (voda)
supply, <i>v.</i>	zásobovat
surveying, <i>n.</i>	vyměrování, zaměrování
technical, <i>adj.</i>	technický, odborný
technology, <i>n.</i>	technologie
tracking system, <i>n.</i>	sledovací zařízení
transport, <i>n.</i>	transport, přeprava, přenos
truck, <i>n.</i>	nákladní auto, kamion
wirelessly, <i>adv.</i>	bezdrátově, rádiově

UNIT 2

abrasion resistance, <i>n.</i>	odolnost proti oděru, otěruvzdornost
alloy, <i>n.</i>	slitina
aluminium, <i>n.</i>	hliník
armour, <i>n.</i>	pancář, pancéřování; kovové vyztužení; kování
brass, <i>n.</i>	mosaz
brick, <i>n.</i>	cihla, tvarovka
contribute, <i>v.</i>	přispívat
copper, <i>n.</i>	měď
degree, <i>n.</i>	stupeň, řád
dense, <i>adj.</i>	hustý
derive, <i>v.</i>	odvozovat
desirable, <i>adj.</i>	žádoucí, požadovaný
distinct, <i>adj.</i>	zřetelný, jasný, odlišný
drive belt, <i>n.</i>	hnací řemen, hnací pás
durable, <i>adj.</i>	trvalý, odolný; trvanlivý
essential, <i>adj.</i>	podstatný, hlavní
extract, <i>n.</i>	extrakt, výtažek
extract, <i>v.</i>	extrahovat
fluid, <i>n.</i>	kapalina, tekutina
fragility, <i>n.</i>	křehkost, lámavost, drobivost
frictional, <i>adj.</i>	frikční, třecí
galvanised, <i>adj.</i>	pozinkovaný
gasket, <i>n.</i>	ploché těsnění, těsnicí vložka
hardwood, <i>n.</i>	tvrdé dřevo, dřevo listnatých dřevin
high-grade, <i>adj.</i>	vysoce kvalitní, velmi kvalitní, jakostní, prvotřídní
high-grade steel, <i>n.</i>	ušlechtilá ocel
incorporate, <i>v.</i>	zahrnout (vytvořit celek), začlenit, přidružit, připojit
induce, <i>v.</i>	indukovat, způsobit
insert, <i>v.</i>	vložit, vkládat
ironmongery, <i>n.</i>	železářství; kování dveří, oken
jar, <i>n.</i>	sklenice
leakage, <i>n.</i>	netěsnost, prosakování, propouštění, unikání, rozptýl

lifespan, <i>n.</i>	životnost
long-lasting, <i>adj.</i>	dlouhotrvající, trvalý
man-made, <i>adj.</i>	umělý, uměle vyrobený
melt down, <i>v.</i>	roztavit, natavit
modulus, <i>n.</i>	modul
obstacle, <i>n.</i>	překážka, zátaras
obvious, <i>adv.</i>	jasně, viditelně, zřetelně
ore, <i>n.</i>	ruda
pulp, <i>n.</i>	drť
recover, <i>v.</i>	obnovit, regenerovat, dostat zpět
remove, <i>v.</i>	vyjmout
resistance, <i>n.</i>	odpor
retain, <i>v.</i>	zachovat, ponechat, neztrácet
reuse, <i>n.</i>	opětovné použití, znovupoužití
rubber, <i>n.</i>	kaučuk, pryž, guma
rust, <i>n.</i>	rez, sněť
softwood, <i>n.</i>	měkké dřevo
sorting, <i>n.</i>	třídění, rozdělování podle druhů
stainless, <i>adj.</i>	nerezavějící, nekorodující
thermal stability, <i>n.</i>	tepelná stálost
timber, <i>n.</i>	užitkové dřevo, stavební dřevo
toll, <i>n.</i>	poplatek na údržbu
toughness, <i>n.</i>	pevnost, tvrdost
trace, <i>n.</i>	stopa
unique, <i>adj.</i>	unikátní, zvláštní
zinc, <i>n.</i>	zinek

UNIT 3

adhesive, <i>n.</i>	lepidlo
affect, <i>v.</i>	ovlivňovat, působit na něco
blade, <i>n.</i>	čepel
bolt, <i>n.</i>	šroub
bond, <i>n.</i>	spojení
briefing, <i>n.</i>	instruktáž
casing, <i>n.</i>	kryt, obal
clip, <i>n.</i>	svorka
connection, <i>n.</i>	spojení
cylinder, <i>n.</i>	válec
flush with, <i>v.</i>	být v rovině s
fuselage, <i>n.</i>	trup letadla
glue, <i>n.</i>	lepidlo
groove, <i>n.</i>	drážka
hole, <i>n.</i>	otvor
joint, <i>n.</i>	kloub, svár, spoj
pin, <i>n.</i>	kolík
plug, <i>n.</i>	zástrčka
pressure, <i>n.</i>	tlak, napětí
recess, <i>v.</i>	zapustit
rectangle, <i>n.</i>	obdélník
ridge, <i>n.</i>	výstupek
rivet, <i>n.</i>	nýt
screw, <i>n.</i>	vrut
shape, <i>n.</i>	tvar, podoba, obrys
socket, <i>n.</i>	zásuvka
slot, <i>n.</i>	otvor, zdírka
subsequent, <i>n.</i>	následující
set back, <i>v.</i>	odsadit
triangle, <i>n.</i>	trojúhelník
weaken, <i>v.</i>	oslabit
weld, <i>n.</i>	svar
windshield, <i>n.</i>	čelní (ochranné) sklo

UNIT 5

adequate, <i>adj.</i>	přiměřený
adjacent, <i>adj.</i>	přilehlý
airborne, <i>adj.</i>	vznášející se ve vzduchu
airflow, <i>n.</i>	proud vzduchu
alert, <i>n.</i>	pohotovost, výstraha
alerting, <i>n.</i>	signalizace
approach, <i>v.</i>	přiblížit se
assess, <i>v.</i>	vyměřovat; odhadovat
at full throttle	na plný plyn
bolt and nut, <i>n.</i>	šroub s maticí
bump, <i>n.</i>	úder, náraz
clog, <i>v.</i>	ucpávat se
clutch, <i>n.</i>	spojka
coolant, <i>n.</i>	chladiivo, chladicí kapalina
crack, <i>v.</i>	prasknout, trhat se
crew, <i>n.</i>	posádka
crucial, <i>adj.</i>	rozhodující, klíčový
cut out, <i>v.</i>	vypojit, vypnout
deploy, <i>v.</i>	rozmístit
disproportionate, <i>adj.</i>	nepoměrný, nepřiměřený
divert, <i>v.</i>	odklonit se, odvést
emergency, <i>n.</i>	stav nouze
emergency braking, <i>n.</i>	nouzové brždění
emphasise, <i>v.</i>	zdůraznit
endurance, <i>n.</i>	odolnost
exceed, <i>v.</i>	překročit, překonat
failure, <i>n.</i>	porucha
flap, <i>n.</i>	klapka
flight recorder, <i>n.</i>	letový zapisovač
fly-by-wire controls, <i>n.</i>	elektronická letecká kontrola, systém nepřiměřeného řízení letadla
fuel line, <i>n.</i>	palivové potrubí
gauge, <i>n.</i>	měřidlo, kontrolní měřicí přístroj

gearbox, <i>n.</i>	převodovka
heat, <i>n.</i>	teplo
chassis, <i>n.</i>	podvozek
interpretation, <i>n.</i>	vysvětlení, výklad
jam, <i>n.</i>	zaseknutí, zadření, uváznutí
kerb, <i>n.</i>	obrubník
leak, <i>v.</i>	prosakovat, propouštět
maintenance, <i>n.</i>	údržba, obsluha
pipe, <i>n.</i>	trubka, potrubí
precaution, <i>n.</i>	výstraha, opatrnost
pushrod, <i>n.</i>	rozvodová tyč (ventilu)
reliability, <i>n.</i>	spolehlivost
right-hand, <i>adj.</i>	pravotočivý, pravostranný
rub, <i>v.</i>	dřít, třít, odírat se
run out of, <i>v.</i>	vyčerpat, spotřebovat
rupture, <i>n.</i>	roztržení, prasknutí
shut down, <i>v.</i>	zavřít, vypnout
spoiler, <i>n.</i>	rušič vztlaku
sufficient, <i>adj.</i>	dostačující
tub, <i>n.</i>	nádrž
wear out, <i>v.</i>	opotřebovat
wing, <i>n.</i>	blatník

UNIT 6

amount, <i>n.</i>	množství, stupeň, velikost
ballast, <i>n.</i>	štěrk; zátěž
beam, <i>n.</i>	trám, nosník
bodywork, <i>n.</i>	karoserie auta
budget, <i>n.</i>	rozpočet
buffet, <i>v.</i>	bouchnout, bušit pěstí
capacity, <i>n.</i>	kapacita, objem, obsah
cement, <i>n.</i>	cement, lepidlo, pojivo
column, <i>n.</i>	sloupec, sloup
concrete, <i>n.</i>	beton
construction manager, <i>n.</i>	hlavní stavbyvedoucí
consulting engineer, <i>n.</i>	technický poradce, konzultační inženýr
core drilling, <i>n.</i>	jádrové vrtání, vrtání na jádro
dead, <i>adj.</i>	nepotřebný, vyřazený (stroj)
deceleration, <i>n.</i>	zpomalení, zpomalování
detach, <i>v.</i>	oddělit, odpojit
diamond drill, <i>n.</i>	diamantový vrták
dimension, <i>n.</i>	rozměr, míra, velikost
dip, <i>v.</i>	barvit ponořením, ponořit, máčet
drill hole, <i>n.</i>	vývrt, vrt, vrtaná sonda
efficiency, <i>n.</i>	zdatnost, účinnost, efektivnost
equip, <i>v.</i>	vybavit, vystrojit, vyzbrojit
expose, <i>v.</i>	vystavit vlivu, odkrýt
extent, <i>n.</i>	rozloha, rozsah, míra, velikost
feasibility, <i>n.</i>	proveditelnost, možnost, přípustnost
gantry crane, <i>n.</i>	portálový/kozový jeřáb
generate, <i>v.</i>	tvořit, vytvářet, vyvíjet
hacksaw, <i>n.</i>	rámová pila (pilka na kov)
hammer drill, <i>n.</i>	(ruční) vrtací kladivo
jolting, <i>n.</i>	střásání, pěchování střásáním
layout, <i>n.</i>	rozestavení, prostorové uspořádání

looks, <i>n.</i> (also look)	vzhled
manufacturing, <i>n.</i>	vyrábění, zhotovení, výroba
needs (also gap/ requirement)	analýza potřeb
analysis, <i>n.</i>	
overall size, <i>n.</i>	celková velikost
performance, <i>n.</i>	výkon (stroje), práce; výkonnost, účinnost
precision, <i>n.</i>	přesnost, jemnost
pre-drill, <i>v.</i>	předvrtat
regulations, <i>n.</i>	předpisy, nařízení
run down, <i>n.</i>	pomalé odstavení (reaktoru)
schedule, <i>n.</i>	seznam, soupis, rozvrh, program
simulate, <i>v.</i>	simulovat, napodobovat
solidity, <i>n.</i>	plnost (rotoru),
steel bar, <i>n.</i>	ocelový prut, kovová (ocelová) stropnice
thrust, <i>n.</i>	tlak, tah (vrtule, rakety,...)
timescale, <i>n.</i>	časové měřítko, časová míra, časový rámec
wiring, <i>n.</i>	elektroinstalace, propojení vodičů
withstand, <i>v.</i>	odolávat, snášet, vydržet
work out, <i>v.</i>	vyčerpat, vypracovat, vypočítat, vyřešit

UNIT 7

acid, <i>n.</i>	kyselina
chemical, <i>n.</i>	chemikálie
confined space, <i>n.</i>	omezený prostor
corrosive, <i>n.</i>	korozivní
cradle, <i>n.</i>	závěsná pracovní lávka, podpěrná konstrukce
damage, <i>v.</i>	poškodit, porouchat
designate, <i>v.</i>	označit, určit, stanovit, jmenovat
detector, <i>n.</i>	detektor, snímač
exposure, <i>n.</i>	vystavení nebezpečí
fizz, <i>n.</i>	šumění, sykot
flammable, <i>adj.</i>	zápalný, hořlavý
fume, <i>n.</i>	kouř, dým, výpar
grinder, <i>n.</i>	bruska, brusný kotouč
guardrail, <i>n.</i>	ochranná/ vodící kolejnice; ochranné zábradlí
hazard, <i>n.</i>	nebezpečí, riziko
hover, <i>v.</i>	viset (vrtulník), létat nad jedním objektem
ignition, <i>n.</i>	zapalování, zážeh
irritant, <i>adj.</i>	dráždivý, dráždicí
issue, <i>v.</i>	vytékat, dávat do oběhu
lock-out, <i>v.</i>	vypojit, vypnout
outlet pipe, <i>n.</i>	výstupní potrubí
power line, <i>n.</i>	silnoproudé (přenosové) vedení
precautions, <i>n.</i>	výstraha, opatrnost, bezpečnostní opatření
pylon, <i>n.</i>	stožár (např. mostu, vysokého napětí)
rash, <i>n.</i>	vyrážka
restricted, <i>adj.</i>	omezený
safety officer, <i>n.</i>	bezpečnostní manažer
shot blasting, <i>n.</i>	otryskávání ocelovou drtí
silo, <i>n.</i>	silo, zásobník
snagging, <i>n.</i>	ruční broušení, hrubé obrábění
spark, <i>n.</i>	jiskra
suspend, <i>v.</i>	pozastavit, odložit
switchboard, <i>n.</i>	přístrojová deska

UNIT 8

assumption, <i>n.</i>	předpoklad, domněnka
band, <i>n.</i>	pás, (hnací) řemen
blind, <i>n.</i>	roleta, clona u fotoaparátu
blip, <i>n.</i>	el. výchylka
consumption, <i>n.</i>	spotřeba, odbyt, využití
duty cycle, <i>n.</i>	pracovní cyklus
exploit, <i>v.</i>	využít, využívat
fluctuation, <i>n.</i>	kolísání, změna
gravity, <i>n.</i>	gravitace
indicate, <i>v.</i>	indikovat, ukazovat
kettle, <i>n.</i>	kotlík, kotel
measurable, <i>adj.</i>	měřitelný
option, <i>n.</i>	alternativa, volba
peak demand, <i>n.</i>	špičková potřeba
pick up, <i>v.</i>	snímat, sbírat, zvedat
pressure plate, <i>n.</i>	přítlačná/ tlačná deska
pump, <i>n.</i>	čerpadlo, vývěva, stříkačka
refrigeration unit, <i>n.</i>	chladič vody
refrigeration, <i>n.</i>	chlazení, ochlazování
rely (on), <i>v.</i>	být závislý (na)
reservoir, <i>n.</i>	nádrž, nádržka, zásobník
set off, <i>v.</i>	odsadit, odbočit
start-up, <i>n.</i>	spuštění, rozběh (motoru, reaktoru,...)
store room, <i>n.</i>	skladiště
thermostat, <i>n.</i>	termostat, regulátor teploty
trigger, <i>v.</i>	spustit, spouštět

UNIT 9

aeronautical, <i>adj.</i>	letecký
anchored, <i>adj.</i>	kotvený, zakotvený
anticipate, <i>v.</i>	předvídat, předejít
assemble, <i>v.</i>	spojovat, sestavovat
attain, <i>v.</i>	dosahovat, získat, nabít
back-to-back test, <i>n.</i>	zkouška metodou vzájemného zatížení
bear in, <i>v.</i>	rubat, podrubávat
cargo, <i>n.</i>	náklad, nákladní loď
coincidence, <i>n.</i>	shodnost, shoda
compressed air, <i>n.</i>	stlačený vzduch
comprise, <i>v.</i>	sestávat, tvořit
deformable, <i>adj.</i>	deformovatelný, tvárný
estimate, <i>v.</i>	odhadovat, oceňovat
exploration, <i>n.</i>	výzkum
field test, <i>n.</i>	zkouška v terénu
full-scale test, <i>n.</i>	zkouška v plném měřítku
hull, <i>n.</i>	trup letadla (lodi)
launching pad, <i>n.</i>	odpalovací rampa
mock-up, <i>n.</i>	maketa, model ve skuteční velikosti
overestimate, <i>v.</i>	přecenit, odhadnout příliš vysoko
overheating, <i>n.</i>	přehřátí, přehřívání
overload, <i>v.</i>	přetížit
parachute, <i>n.</i>	padák
permit, <i>v.</i>	dovolit, povolit
pressure gauge, <i>n.</i>	tlakoměr, manometr
pressurised, <i>adj.</i>	tlakový
purchase, <i>v.</i>	získávat
reduced-scale, <i>n.</i>	zmenšené měřítko
rocket, <i>adj.</i>	raketový, reaktivní
sink, <i>v.</i>	klesat, propadnout se
strike, <i>n.</i>	náraz
trial and error, <i>n.</i>	experimentální metoda, zkusmá metoda

trial run, *n.*

underestimate, *v.*

unfamiliar territory, *n.*

windswept, *adj.*

wind tunnel, *n.*

workmanship, *n.*

zkušební jízda, provozní zkouška

podcenit

panenská půda

vystavený (větru)

aerodynamický tunel, ventilační kanál

provedení, odborné zpracování, odbornost

UNIT 10

coastal, <i>adj.</i>	pobřežní, přímořský
inherently, <i>adv.</i>	vlastně, vrozeně
offshore, <i>adj.</i>	pobřežní, pevninský, mimo břeh
positioning, <i>n.</i>	nastavení/ uložení do polohy
standpoint, <i>n.</i>	hledisko, stanovisko, pohled
stem, <i>v.</i>	kouřit se, tvořit páru
transmitting, <i>n.</i>	předání, doručení

LIST OF ABBREVIATIONS

adj. – adjective

adv. – adverb

n. – noun

v. – verb

4. ANALYSIS OF THE DICTIONARY

4.1. Method of word selection

The textbook is divided into 10 units. Students of HEFE (and XAEI) go through all units except for unit 4. The syllabus of this subject states just certain parts. (For example students are taught exercises from pages 6 – 8 and 8 - 9 in Unit 1). Unknown and problematic words are selected from the perspective of students, as well as words that are in the *Glossary of technical terms* (it is the final part of the textbook). Definitions of the words in the glossary are compared with Czech translations in a dictionary.

The basic condition to classify the word into the English-Czech learning dictionary is its placement in the technical dictionary *Anglicko-český technický slovník (2003)* by Jiří Elman and Václav Michalíček or in *Academic Word List* (“*Academic Word List*”).

The textbook has a language level B1 – B2, thus the learning dictionary has to contain words of level B1 and higher. *Cambridge Dictionary Online* (“Cambridge Free English Dictionary and Thesaurus”) states the word’s level of each headword. For example, the Cambridge Dictionary states that words *engine*, *tyre* or *circle* have level A2, the words are thus not classified in this dictionary even though they are technical in their nature. On the other hand, there are words such as *jam* or *rubber* that are classified in more language levels, the level depends on the word meaning.

4.2. Analysis of Unit 1

This unit is focused on describing technical functions and applications and explaining how technology works. Some words (such as *launch*, *delivery vehicles* or *detect*) seem to be technical, but they cannot be found in the technical dictionary. On the other hand, in our learning dictionary are also classified words that are in the *Academic Wordlist*, such as *core*, *detect*, *technology*, *technical*, *transport*, *impact* or *enhance*.

This thesis is based on technical terms. Some of them can be found in technical as well as in *non-technical* dictionaries. There are some examples:

Payload - in a technical dictionary it is translated as *užitečný náklad*, but in non-technical internet dictionary we can find *nesený náklad* (for example: *rakety*).

Maritime – *Maritime* is used in exercise 3. The task of exercise is matching the terms with definitions. *Maritime applications* should be matched to the definition *navigation and safety at sea*. There is not a significant difference in translation, however, there are some marginal differences. The technical dictionary translates it as *mořský*, in the Internet dictionary it is translated as *námořní*. *EN-CZ, CZ-EN dictionary* is more specific about these words. If the word is related to the sea, it should be translated as *námořní*. This possibility is used on the basis of its definition.

4.3. Analysis of Unit 2

The topics of Unit 2 are *Describing specific materials* and *Specifying and describing properties*. In this unit there were a lot of words (*trace, derive, remove, unique, distinct, induce* or *incorporate*) that are in the *Academic Wordlist*.

There are also a few words that can be found in non-technical dictionaries. In some cases the sense of the word is completely different.

Copper – technical meaning is clear: *měď* (noun) or *pomědit* (verb). Similar meanings are also in a non-technical dictionary, but there are also completely different meanings and they are used in an informal communication with word sense *policajt* or *polda*. The textbook uses it in an article about *Recyclable materials* (Ibbotson 14) with the meaning as metal, it follows that *měď* is used in the learning dictionary.

Jar – The noun is used in textbook in the same article as previous word in the sentence “... *coloured materials used in bottles and jars, and...*” (Ibbotson 14). It is translated as *zavařovací sklenice* in the Internet search engine. Czech translation *sklenice* is used if the word has the meaning of *container*.

Recover – Maybe, it is a familiar word for students of HEFE/XAEI. They probably know Czech translation *obnovit* or *dostat zpět*. However, students who find this word in the technical dictionary can be confused. In common dictionaries there is also the meaning *uzdravit se*. Students have to become aware of the given topic and select the correct option.

Trace – this word is used in exercise 2 C in the sentence “*Glass tableware contains traces of metals, such as lead.*” (Ibbotson 15) There are some possibilities for translation *stopa, trasa, náčrtek* or *vryp* in a technical dictionary. From the meaning of the sentence it is clear that for our dictionary the translation *stopa* is selected.

Man-made – the most problematic word in this unit. It is not in a technical dictionary, it is necessary to find it on the Internet (“Manmade”). However, it is an adjective which is connected to the field of technology. The translation of man-made is *umělý*.

4.4. Analysis of Unit 3

The syllabus of this unit is focused on *Describing component shapes* and *Features and explaining jointing and fixing techniques*.

The unit contains only two words, which are in the *Academic Wordlist* – *briefing* and *subsequent*. The other words can be found in a technical dictionary. Most of the words have a clear meaning, but words such as *ridge*, *line*, *blade*, *bolt* or *affect* can cause problems.

Bolt – in a non-technical text it can be translated as *šíp do kuše*. But it cannot be used in technical translations. For these purposes it is better to use a technical dictionary. The Czech translations are *šroub (s maticí)* or *zástrčka* there.

Blade – Translation *stéblo trávy* is appropriate in texts of natural science. In technical vocabulary there are a lot of possibilities to translate it into Czech – *břit*, *ostří*, *lopatka turbíny* or *list pily*. In the textbook glossary the definition is *cutting device, often metal with a sharp or toothed edge* (Ibbotson 108). Translations *břit*, *ostří* are the best in comparison with this definition above.

Ridge – the same problem as with the word blade is with ridge. We are able to find translation *výstupek*, however, in common dictionary also *hřeben (of mountains)* is stated.

4.5. Analysis of Unit 5

The description of the types of technical problem and describing the causes of faults – these two topics are taught in this unit. In the articles of this unit there are also phrasal verbs that are also included in the vocabulary, since they are sometimes difficult for students. Moreover, the word *maintenance* is classified there due to it is in *Academic Word list*.

However in this unit there are words, which are familiar to students, but in non-technical meanings. Several examples of this lesson:

Pipe – This word appears in the unit in phrases (e.g. a radiator pipe or hydraulic pipe). Students know Czech translation *dýmka* or *fajfka*. However, it is not appropriate for technical purposes. For our English-Czech dictionary *trubka*, alternatively *potrubí* was the right one.

Spoiler – This noun has only one translation in a technical dictionary – *rušič vztlaku*. Although in a non-technical dictionary, it has more translations such as *záškodník* or *kazisvět*.

Fly-by-wire controls – This phrase was quite problematic. It was not stated in a technical dictionary, only in the Glossary of the textbook. There is a definition: “Aircraft control, which operates moveable devices (e.g. flaps) electronically rather than mechanically”. (Ibbotson 109) There is a problem with the Czech equivalent of *fly-by-wire controls*. On the Internet there were found some possibilities – *elektronická letecká kontrola* or *systém nepříměného řízení letadla* (“Překlad hesla F”). Both of them are used in the learning dictionary.

Chassis – The technical dictionary states the translations *chassis* and *podvozek*. The second meaning is probably obvious, but what about the first? Students who are not familiar with this area of technology do not know what this Czech equivalent means.

Similar situation can arise with words such as *friction* or *spoiler*. The solution is to use monolingual dictionary, find the definition and try to guess the meaning of the word.

4.6. Analysis of unit 6

The heading of unit 6 is *Technical development*. This unit is divided into 4 parts, however, students are taught only two of them, namely *Discussing technical requirements* and *Assessing feasibility*. Nouns predominate in the vocabulary of this lesson. Most of words were found in a technical dictionary, only 4 words were classified on the basis of *Academic word list* – *simulate*, *generate*, *equip*, *expose*. There were a lot of fixed phrases, for instance *construction manager*, *gantry crane*, *hammer drill*, *diamond drill* or *consulting engineer*.

Cement – The word appears to be non-problematic. Most students know the Czech translation *cement*, but there are other translation options - *tmel*, *lepidlo* or *pojivo*. It depends on the context where the word is used.

Capacity – Translations as *kapacita*, *objem*, *výkon*, *vydatnost*, ... were found in English-Czech technical dictionary. The word can be used in non-technical text, afterwards it is possible to translate as *schopnost* or *způsobilost*. These equivalents were in non-technical dictionary.

Dip – The word is associated with food for a lot of people – we use this word in the meaning as *omáčka* or *krém*. The sentence “Why don’t we dip them in paint?” is in exercise 9.f (Ibbotson 51). It is important to realize that it is a verb and the suitable translation is *ponořit* or *namáčet*.

Hammer-action drill – This word is in textbook in exercise 10. It was sought in dictionary of technology, in non-technical bilingual dictionary and also on the Internet. Unfortunately, in all cases it was found in the form *hammer drill* with Czech translation *ruční (vrtací) kladivo*, so it was also used in this student’s dictionary.

4.7. Analysis of unit 7

The seventh unit is called *Procedures and precautions*. This unit is divided into four parts, of which two are discussed, specifically *Describing health and safety precautions* and *Emphasising the importance of precautions*.

The lesson is rich in phrases. It is important to know them together, it has an unambiguous meaning. For example: *outlet pipe* (CZ: *výstupní potrubí*), *power line* (CZ: *silnoproudé vedení*), *shot blasting* (CZ: *otryskávání ocelovou drtí*) or *safety officer* (CZ: *bezpečnostní manažer*). These phrases are stated only in a technical dictionary, which reflects the significance of this type of dictionary. The words *suspend* and *restricted* are in the *Academic World List*.

However, an analysis of this unit is slightly different than in other lessons. In unit 7 there are words, which have a more possible translations in the technical dictionary by Elman and Michalíček. It is a reason why the Czech translations from the technical dictionary are compared with translations in bilingual non-technical dictionary. Moreover, this English-Czech, Czech-English dictionary shows the possible collocations that specify the Czech translation.

Exposure – Students find the word in the exercise 2, in which the word has to be matched with the definition. In bilingual *EN-CZ, CZ-EN dictionary* by Collyah and col. states translations such as *vystavení, prozrazení, orientování stavby* or *zima*.

The noun *exposure* should be matched with the definition *contact (with danger)*, it corresponds to Czech translation *vystavení se (nebezpečí)*. This choice is confirmed by English-Czech technical dictionary.

Hover – An exercise 6 is the article that starts with the sentence *A helicopter hovers between the towering pylons....* (Ibbotson 57) These words might be unknown and problematic: the verb *hover* and noun *pylon*. The Czech equivalents of the verb found in English – Czech technical dictionary by Elman are *létat nad jedním objektem* or *viset (o vrtulníku)*. As in the previous case, they are balanced against *EN-CZ, CZ-EN dictionary*. It gives us translation with the word *helicopter*, literally *udržovat výšku bez pohybu vpřed*. Thus, the Czech translation, which is included in learning dictionary, is *viset (vrtulník)*.

Pylon – This word is stated in the previous paragraphs as probably unknown. In this case, translation in both using dictionaries are similar, therefore the noun is translated as *stožár (např. mostu)*.

4.8. Analysis of unit 8

Monitoring and control is the title of unit 8 of textbook. Words are classified into dictionary based on their placement in the technical dictionary, except for *option*, *trigger* and *exploit*. These words are in *Academic World List*.

Lots of synonyms are in this part of textbook. For example: *Pick up* is the synonym for *sense*, the Czech equivalent for both is *snímat*. English synonyms *set off* and *trigger* are assigned to *activate*. The common translation for them is *spouštět, spustit*.

Band – This word has one possible Czech translation in *EN-CZ dictionary*, namely *pás* or *hnací hřemen*. The bilingual dictionary provides one more Czech translation that is *vlnové pásmo*.

Peak demand – If students use technical dictionary, they found *špičková spotřeba*, but bilingual dictionary translates *peak* as *rekordní* (in connection with word *demand* or *output*).

Blip – A definition *momentary rises followed by a fall* corresponds to *blip*. *Blikající bod na obrazovce* (equivalent was searched by Seznam.cz dictionary), however, other translation *výchylka* in English-Czech technical dictionary corresponds with the definition.

4.9. Analysis of unit 9

This penultimate unit *Theory and practise* is studied in detail, overall 3 skills parts are taught, namely *Explaining tests and experiments*, *Comparing results with expectations* and *Discussing causes and effects*.

Vocabulary of this unit is translated mostly from English–Czech technical dictionary. It is necessary to find two collocations, which are analysed below, in the non-technical bilingual dictionary. It means that their placement in the learning dictionary is not based on the given rules. However, understanding of the text is not possible without knowing them. Only two words *comprise* and *anticipate* are chosen due to its presence in *Academic Word List*.

Trial and error – The collocation is subordinate to headword *trial*. It can be translated in three possible ways – *experimentální metoda*, *zkusmý postup* or *zkusmá metoda*. All options have the same sense.

Unfamiliar territory – An enter word *unfamiliar* offers a lot of expressions connected with it. One of its typical collocations is also *unfamiliar territory* that is translated as *panenská půda*.

4.10. Analysis of unit 10

Only the first two pages of unit *Pushing the boundaries* are taught. From the unit, seven words are selected according to their placement in the Technical dictionary by Elman. These words were compared with *EN-CZ, CZ-EN dictionary* without greater differences.

5. AN ELECTRONIC SOLUTION

Printed dictionaries (also called *paper dictionaries*) are relatively huge, heavy and a number of words is limited. People want to have everything immediately, which also applied to searching to words in the dictionaries. Everybody is able to operate with electronic dictionary, moreover it is permanently accessible. The printed dictionaries are replaced by electronic dictionary.

These words are confirmed by Sylviane Granger and Magali Paquot: “Today lexicography is largely synonymous with electronic lexicography and many specialists predict the disappearance of paper dictionaries in the near future. Symptomatic of this trend is the announcement by Oxford University Press in 2010 to the effect that the next edition of the Oxford English Dictionary, the uncontested historical dictionary of the English language, will probably no longer be published in paper format because demand for the online version is so radically outstripping demand for the printed version.” (2)

The *electronic dictionary* is a device that serves as a digital form of dictionary. Electronic dictionaries are smaller, lighter and more hi-tech than *printed dictionaries*. There are a lot of types of them. They can be obtained on CD-ROMs, programmes can be downloaded from the Internet or people use on-line dictionaries.

The biggest benefit of electronic dictionaries is their ability to carry them with us (smart phones, tablets, laptops). The pronunciation, which is usually recorded by native speakers, is another advantage over the printed dictionaries and the faster finding of synonyms and antonyms of headwords. The searching of words is far better than in *paper dictionaries* owing to an automatic retrieval of words by entering only the first letter (or letters) of the word. Some dictionaries provide encyclopaedic information, it means information summary according to topics and principally, they can be updated anytime. Moreover, the electronic dictionary can serve as learning programmes as well as selected applications described below.

Control and operating principles of stated applications are described in the following text that will be divided into several parts that will describe an import of words into the applications, an operation principle of phone applications and the possibilities of computer using (web applications).

5.1. Dril application

5.1.1. An import of words to Dril application

The first step is signing up into the website <http://web.drilapp.com/>. The registration data are accessible to teachers for potential alterations. It is possible to create new wordbooks after logging in. Our new wordbook is called *XAEI (HEFE)*, it is divided into 9 parts that are called *lectures*. Their names are based on the lesson title, e.g. *U1, U2, ...* 300 words is the upper limit of one lecture, fortunately it is sufficient for our purposes.

The words can be entered individually or imported from an Excel file. Also these files are accessible for teachers as well as for students. If an error is detected, it is possible to correct only individual words in the lesson. However, it is necessary to activate all words by clicking on the button *Active all*.

5.1.2. Phone application

Although the application is available offline, the phone has to be connected to the Internet for downloading applications and for settings wordbooks. Students find it in *Google Play* under the name *Dril – angličtina efektivně*. The application can run after downloading.

Figure 1 depicts the starting of working environment. First, students have to click on *Přihlásit*. The login is *hefe-xaei* and password *vufekt*. After they click on *Učebnice* and see several wordbooks (Figure 2) – individual units (*Unit 1 __, Unit 2 __, ...*) or all units together (called *XAEI/HEFE*). Students choose one of them and click on it. Afterwards, they open the menu (demonstrated on Figure 3) and start trial with *Spustit dril*.

Figure 4 shows the trial environment. Students can set up the language of question and answer in menu. The procedure will be shown with words in English and answers in Czech. For instance, the question is *attach, v.* (*v.* means, that the Czech equivalent is a verb), students can write the answer to empty space or only click on *Zobrazit odpověď*. The correct solution is shown there (Figure 5), if the answer is correct, students can click on *Vím*, if they are not sure on *Ještě ne* and if they do not know on *Nevím*. Application continues with other words. Words, which are unknown, will be repeated until the students identify them with *Vím*.

If the students interrupt the testing, they can start again in the same place. They click on *Spustit dril* on the starting environment.

5.1.3. Web application

The web application is useful for students without a smartphone, in this case it is not necessary to sign up. Students search for the website <http://web.drilapp.com> and click on *Sdílené učebnice* and then they enter the name of the wordbook *XAEI - HEFE*, where they can see all lectures. They select the lecture and click on its title, after that they will see a list of English headwords with Czech equivalents. It can be used as a dictionary without testing.

Nevertheless, it is possible to try the test mode. If students activate the words by clicking on green buttons (see Figure 6), they can start with testing by clicking on *Spustit* (also see Figure 6). The procedure of testing is the same as with the phone application.

5.2. Flashcard Machine

This web application was tested by my supervisor Bc. Magdalena Šedrlová in the subject *English for Information technology* (HEIT and AIT). It is more useful for learning words on the computer than for phones, because the application is paid, thus it is not the best solution as teaching aids. It is in this comparison, since it is sufficient in learning on the computer (laptop).

5.2.1. An import of words to Flashcard Machine application

The web page of this app is on <http://www.flashcardmachine.com/>, the login and password are the same as for the previous Dril application. This flashcard set is called *XAEI – HEFE*, it is classified in the category *Engineering* and the level of set corresponds to *intermediate study level*. A format of the cards can be set in the *Formatting*. The public access is the most important setting, otherwise students could not have access to the vocabulary without logging in.

It is possible to import words through the tab *Manage Flashcard set*. The import was completed by xls file, as well as in Dril application. Txt and csv files can also be used. After that, we can edit the words in the dictionary; it is possible to re-order words alphabetically by term (or by definition) or the word can be replaced by another word.

5.2.2. Phone application

The application can be downloaded for both iOS and Android devices. Unfortunately, it is paid for Android (the price is CZK 59.51). That is a reason why this phone application was not explored in detail.

Information for the iOS device was found in the App store: “Flashcard Machine utilizes the In-App Purchase model so that you can try the application before purchasing. You will receive 100 flashcard flips for free, and you can buy more for as little as \$0.99 or unlimited flips for \$4.99.” (“Flashcard Machine on the App Store”). It is obvious that the dictionary has more than 100 words – it means that in this case application will be paid for students.

It is assumed that using this application on a phone is not the best solution for teaching aid. Although its web application offers interesting possibilities for studying vocabulary.

5.2.3. Web application

A page is opened by this link http://www.flashcardmachine.com/flashcards/?topic_id=3396438. Students choose between two options *Start study session* and *Play game* in the following step.

Start session will be described first. There a choice of two possible sequences. Either *Term then Definition* (in case of XAEI/HEFE dictionary English then Czech) or *Definition then Term*. Another possible setting is about order of cards – *ascending*, *descending* (In these cases there is an option to choose a card that begins.) or *random*. The option of *Auto-flip* is the last option of this *Start study sequence*. The session is started by clicking on *Start session*. The next term is displayed by clicking on the left button and the answer is displayed by pressing a space.

The second option is a *Game*. In the *game configuration* there are three types of games. Multiple choice test is in the option *Quiz me*. A principle of *Speed* is more complicated. Users choose the speed of movement of the cards in *Seconds per round* before start. Figure 7 described a background of this game. The cards are uncovered by one-click on them one by one. Hidden term is displayed on the big card in the right side of the monitor. If students find the right answer, they make double-click on it. Right or wrong solutions are displayed on the screen. *Pop quiz* is for students who are familiar with the vocabulary. Letters are filled to the answer (e.g. in this case it is an essential to know the accurate translation of words that is entered in the HEFE dictionary).

Card printing is the last thing that is worth mentioning. This function is triggered by *Printed friendly HTML* which will be displayed after the opening of the link stated in the first paragraph of 5.2.3. Figure 8 shows a background of the print. Students set a size of letters, a number of terms in one page in *Cut-and-fold* mode. Mode *Index cards* allows to set the size of paper, print size (term, definition or both) and font size. Only certain cards may be printed by entering numbers of cards in the *Specific cards*. The printing is activated by clicking on the first line on the page *Click here to tell your browser to print these cards*.

5.3. Slovíčka (zdarma)

The third application in this comparison is *Slovíčka (zdarma)*. It was selected for its use as a phone application. Its essential benefit is offline use. Students have to be online only for vocabulary download. Unfortunately, the application is not usable for learning words on the webpage.

5.3.1. An import of words to *Slovíčka (zdarma)*

The English-Czech technical dictionary for XAEI and HEFE is created on the website <http://islovicka.cz/>. The author must also be registered on this site. Registration details are the same as in previous two applications. The first step is setting of languages, in which it will be operated. New topic can be added in the section *Tvoje témata*. The topic of this dictionary is called *XAEI – HEFE*, the foreign language is *EN – angličtina*, the native language is *CZ – čeština*. The textbook has 9 units, and this vocabulary is divided into 9 parts.

The words cannot be imported from the Excel file, individual words have to be transcribed manually. The lesson is completed by clicking on *Zpracovat* and *Ukončit*, respectively.

5.3.2. Phone application

This application is accessible to *Android*, *iOS* and phones with *Symbian system*. Sources for downloading might be found in the tab *Ke stažení*. The application started with programme guide after the installation, then it is ready for use. Figure 9 depicts the background of this application. HEFE – XAEI dictionary can be downloaded by bookmark *Stáhnout téma* in *Menu*. The title *XAEI - HEFE* of the dictionary has to be filled in *Vyhledat*.

The wordbook is activated by one-click on the title of the dictionary, as well as the individual lessons. It is possible to choose *Směr překladu*, it means what language should be

tested. There are four possible modes, each of them starts with clicking on *Tak jedem!*. All words are displayed in sub-mode *Zobrazit celou lekci*. *Učit se* means that the words are appeared on the display for several seconds and if students do not know the words, they check *Nevím*, otherwise the following word is shown. Unknown words are displayed again (The text is written in red). Students, who need more time for learning the word, click on *Pozastavit* – the words are displayed longer time. *Procvičovat* means that students see the term in one language (It depends on the selected *direction of translation*.) and in case that students are familiar with them click on *Dál*, if not click on *Nevím*. An unknown word is displayed second also in this mode. Unfortunately, mode *Testovat* is not fully accessible in this free version. If the students want to test this mode, it is necessary to buy this application.

The biggest advantage is searching for words in downloaded topics just by clicking on *Hledat* and entering a word.

5.3.3. Web application

As mentioned above, this web application is not appropriate as study materials. The application is used only for import of words into application, after that it is possible use *Slovička* only as a phone application.

5.4. Summary

Three applications *Dril*, *Flashcardmaschine* and *Slovička (zdarma)* were selected for comparison in the last chapter of the thesis. Sub-chapters give a detailed description of advantages and disadvantages of each of them.

Students, who prefer learning on the computer or do not have smart phone, probably use web application *Flashcardmaschine*. Another function that is useful for students, who like *paper dictionary*, is *Print function*.

The remaining two applications are both appropriate for learning by phones. They are based on the same principle and have similar functions. Primarily, both work offline (except for downloading the applications and wordbooks) and they are free on the Internet. These advantages were cardinal for their placement in learning materials. However, *Slovička* application emerges from comparison slightly better due to its function of searching for words from downloaded wordbooks. It might be recommended to students for downloading.

6. CONCLUSION

People, specialized in technology, are highly respected in the 21th century. It means that studying the English language is more and more important for them. Students of the Faculty of Electrical Engineering and Communication in Brno have a good chance of learning some parts of technical English. One option is studying the subjects HEFE or XAEI.

The aim of this bachelor thesis is to create a bilingual English – Czech dictionary for the students, who study *English for Engineering*. The textbook *Cambridge English for Engineering* by Mark Ibbotson is used in this subject. It has 10 lessons, all of them are analysed, except unit 4 that is not in the syllabus of this subject.

The dictionary is composed of words that could be difficult for understanding texts, to fulfil a tasks or words useful in other subjects. Mostly there are words describing parts of things, shapes and verbs connected with describing operations.

The thesis concentrates on lexicography. Frequently, people mistake *lexicography* for *lexicology*, these terms and differences between them are explained in the first part. Furthermore, the terms as *dictionary*, *word*, *glossary*, *homonyms*, *antonyms*, ... are described in detail there. The second section is called *English-Czech technical dictionary*. The words are ordered according to units in an alphabetical order. Some words were clearly technical, then they were translated with the help of a technical dictionary. In some cases, the word was crucial for understanding of the text, but it was not included in the technical dictionary. Thus, it was necessary to search the Internet (e.g. *fly-by-wire*). The Internet dictionary *Seznam.cz* and *DIC – Anglicko-český slovník* (It is a popular mobile application.) were used for comparison with the technical translation. It proves magnitude of using a technical dictionary while comparing translated meaning and how non-technical dictionaries could be confusing.

The third part of the bachelor thesis is the analysis. It is divided according to lessons, an explanation of the unit's content is at the beginning of each lesson analysis. Selected words and their translations are described in the following text. Also, the analysis contains the source of word translation (it means either a technical dictionary or the Internet dictionary) and an explanation of which the word was classified in this dictionary.

Electronic solution is found in three applications. It is possible to use all of them, but each has its own advantages and disadvantages. It also depends on the student's requirements - somebody likes working with computer, on the contrary, someone prefers phones or printed

version of dictionary. Students have the possibility of choosing which option they prefer. They acquire all links and logins from their teachers.

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IMAGES

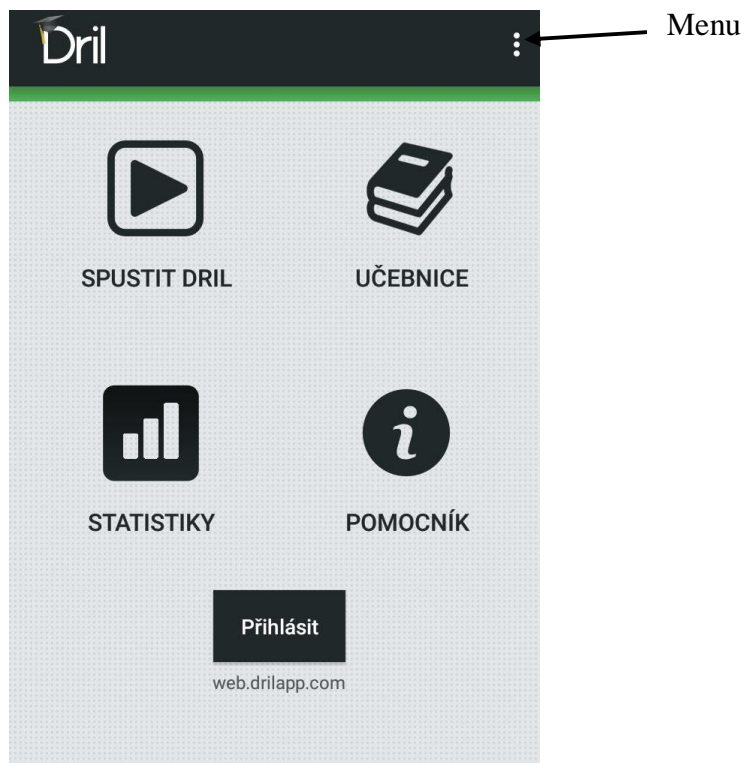


Figure 1 – Screenshot of Dril application background



Figure 2 – Screenshot of Dril application wordbooks

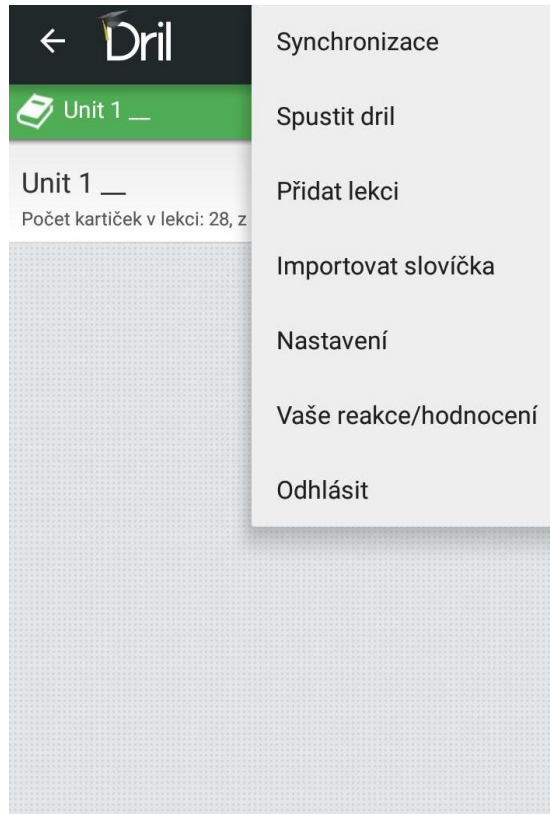


Figure 3 – Screenshot of Dril application start



Figure 4 - Screenshot of Dril application setting

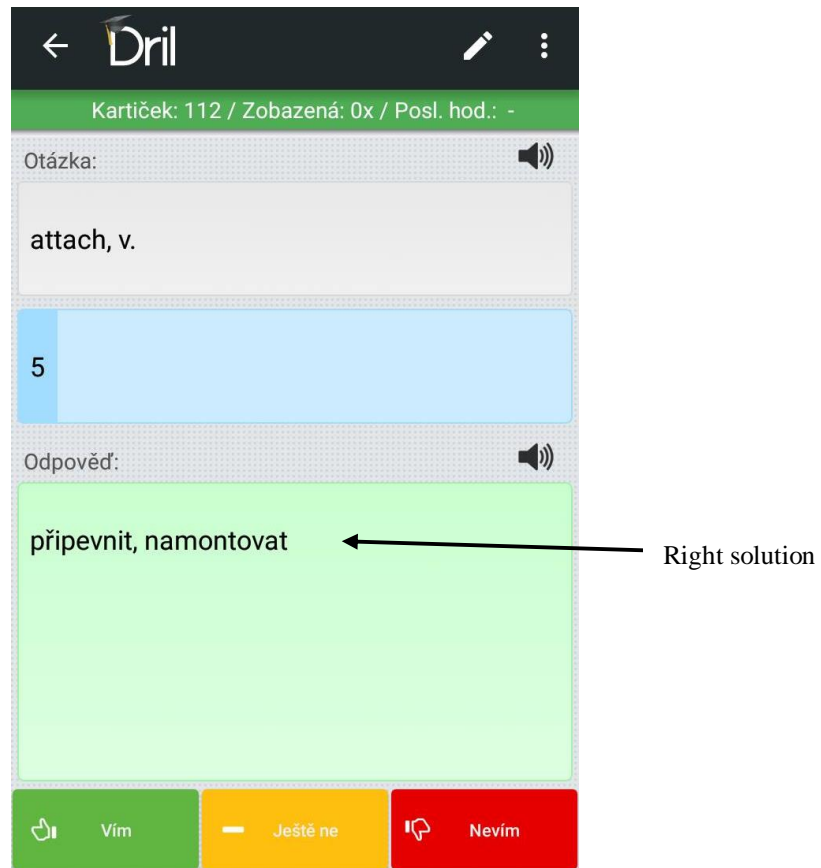


Figure 5 - Screenshot of Dril application testing

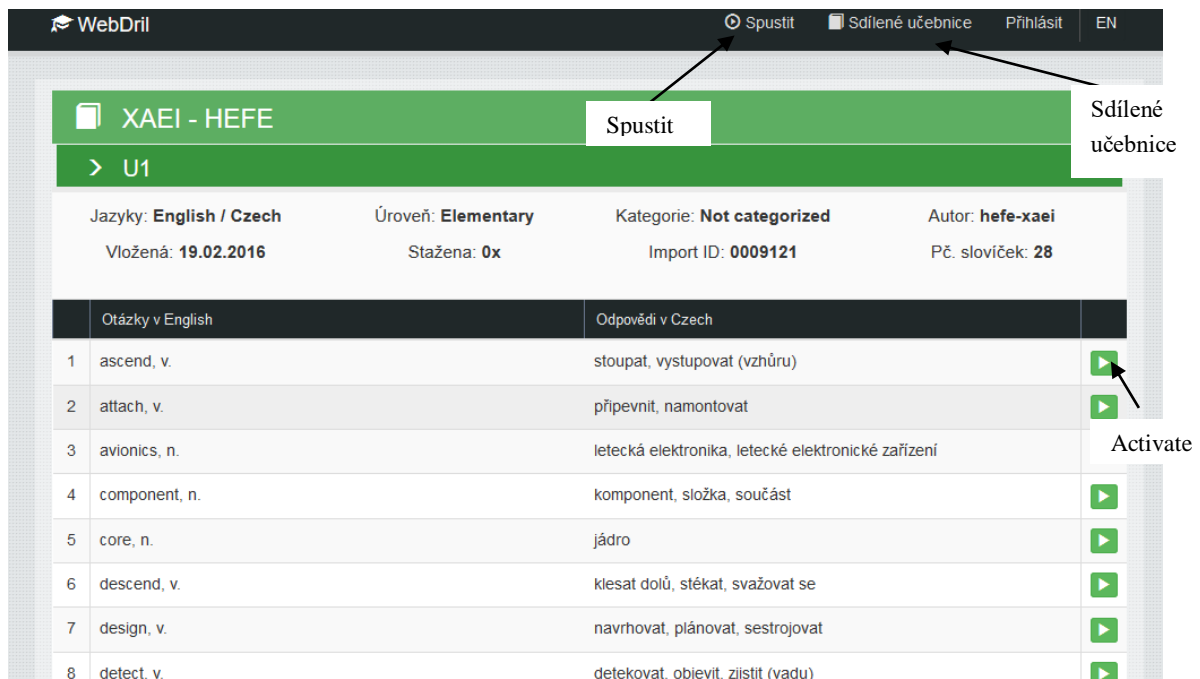


Figure 6 - Screenshot of Dril application

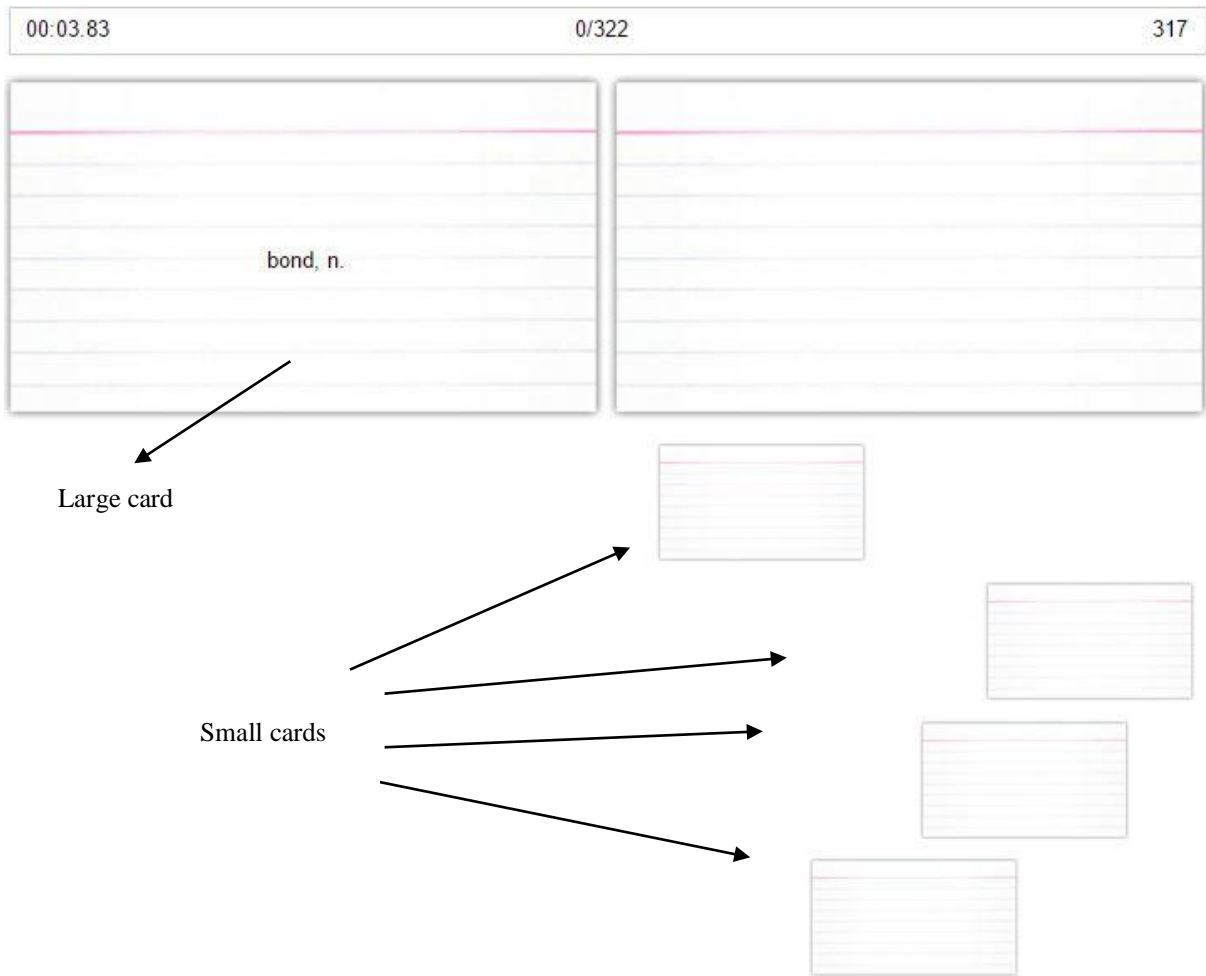


Figure 7 - Screenshot of Flashcard machine

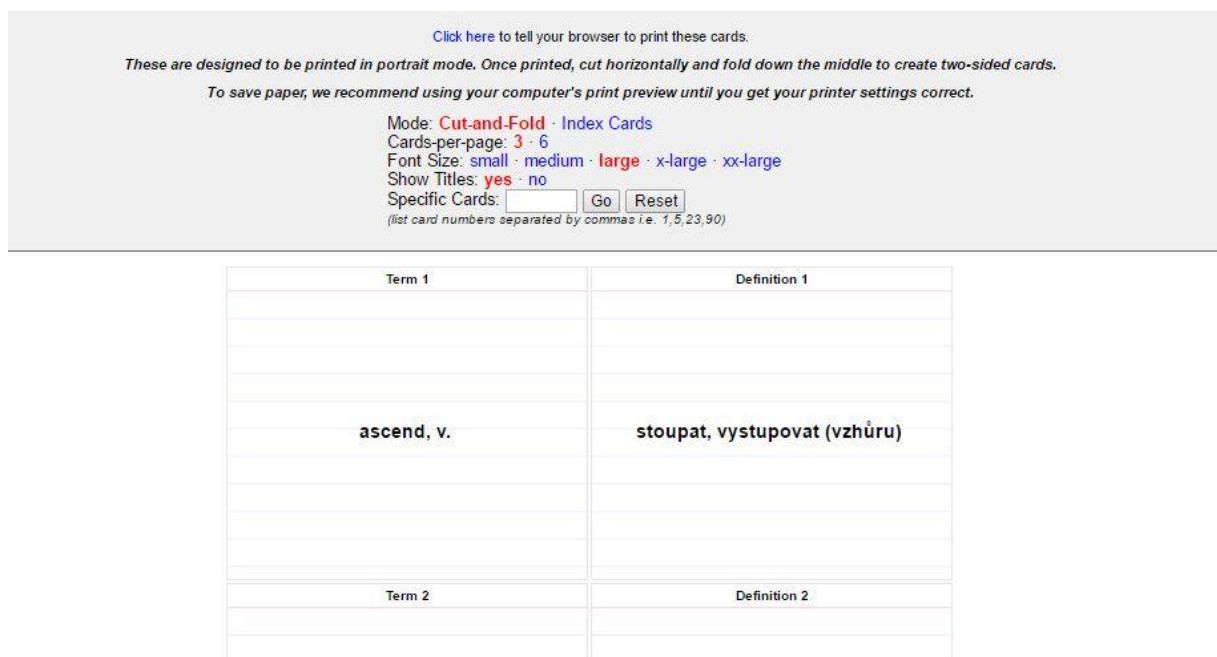


Figure 8 – Screenshot of Print in Flashcard machine

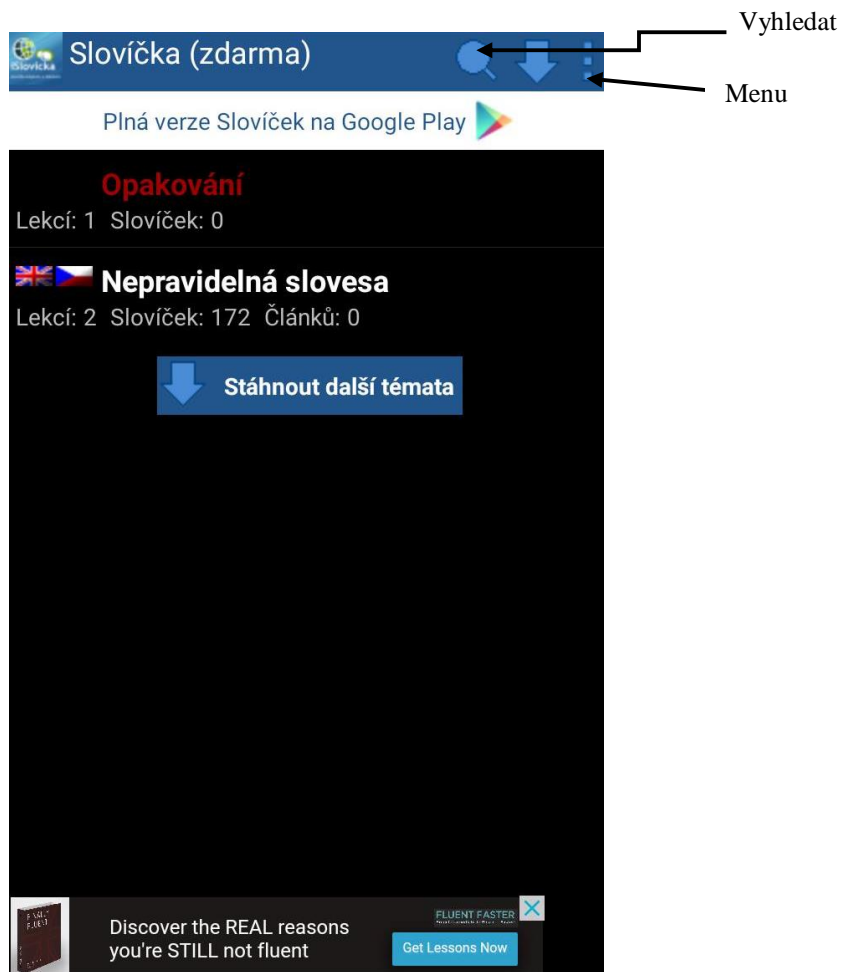


Figure 9 – Screenshot of Slovíčka background