

Word-formation Analysis Software Tool for Teaching Czech for Foreigners (SLAN). An interim report.



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ABSTRACT

The word-formation analyzer for teaching Czech to foreigners (SLAN) is a didactic tool that processes word formation for the needs of teaching Czech as a second/foreign language. The tool represents an opportunity to systematically work with word formation when teaching foreigners and to take advantage of the fact that more than two-thirds of the Czech vocabulary consists of derived words (Dokulil 1962: 105). Specifically, it is about using word-formation meaning, i.e. meaning resulting from the structure of derived words, when clarifying new vocabulary. Such a method complies with the basic didactic principle that an unknown (derived) word is explained using a known (basic) word. The core of the SLAN tool is lists made up of pairs of words *base word* → *derived word*, e.g. *bydlet* ‘to live’ → *bydliště* ‘residence’, which are used by teachers to create their own teaching materials that take word formation into account. Word lists can be generated according to formal criteria (e.g. derived words ending in a selected suffix) as well as semantic criteria (e.g. derived words denoting place names). The tool also includes methodological support intended for teachers and texts for practising word-formation affinity (based on word-formation meaning). The primary source of SLAN data is the UčebKo textbook corpora, thanks to which students work only with words that they actually encounter at their level (A2, B1, or B2).

KEYWORDS

word formation, word-formation meaning, vocabulary teaching, Czech for foreigners, teaching Czech as a foreign language, textbook corpus

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1 INTRODUCTION

In recent years, teaching Czech to foreigners has been a topical and popular direction of linguistics. It is constantly evolving and requires the development of applications, tools and methods that will help students learn Czech quickly and effectively both within the framework of regular classroom teaching and also within online or autonomous teaching. One of the underutilised areas is word formation, which offers great potential for teaching and expanding vocabulary. A number of widely cited works are devoted to the acquisition of word formation and word-formation processes in foreign language teaching, e.g. Clark and Berman 1984; Olshtain 1987; Bauer and Nation 1993; Hacken et al. 2006; Tschichold and Hacken 2015, as well as more recent ones (Argus and Kazakovskaya 2018; Madsen 2019; Mattes et al. 2021; Voeikova et al. 2022; Kuna 2022).



Czech is a language with a developed word-formation system; for overviews see Janda (2010a), Bozděchová (2016), Körtvélyessy (2016). However, the word-formation potential is usually not used to a sufficient extent in the teaching of Czech for foreigners. This is connected on the one hand with the approach of the Czech language textbooks for foreigners which are currently available, and on the other hand with the fact that as part of the preparation for Czech language exams, foreign students have to master several language competencies (speaking, writing, reading, listening). This leaves no time for teachers to work on word formation.

It is necessary to specify what is and what is not considered word formation: e.g. a pair of words such as *podnikatel* ‘businessman’ — *podnikatelka* ‘businesswoman’ will be designated as a pair connected by a word-formation meaning, where one of the words will be motivating (derivative) and the other will be motivated (derived), whereas in the pair of words *zajímavý* ‘interesting’ — *zajímavější* ‘more interesting’ the relation is formative (purely grammatical, where there is no change in the meaning of the word, but only a change in grammatical characteristics). However, in both cases the suffix takes part in the formation of the new form: *-ka* for *podnikatelka* and *-ější* for *zajímavější*.

Word formation traditionally lies between lexicology and morphology, which can be used in teaching Czech as a foreign language. According to Hacken et al. (2006) “word formation is important in second language acquisition because it is the only among the most important mechanisms for the extension of the lexicon which requires the non-native speakers to learn new rules” (2006: 245-246). As stated by Válková and Kolářová (2021: 79): “In our opinion, the connection with lexicology can be grasped by the idea that a foreign student could get by with knowledge of words from the core of the vocabulary, which are usually words not derived from the current point of view (e.g. *dům* ‘house’, *les* ‘forest’, *jít* ‘to go’), and the others, i.e. derived words (e.g. *domovní* ‘domestic’, *lesník* ‘forester’, *odejít* ‘to leave’) could be worked out based on knowledge of underived words and word-formation rules.”

2 AIMS AND MOTIVATION

The aim of the project “Word-formation Analysis Software Tool for Teaching Czech for Foreigners” (hereafter SLAN) was to address word formation in the context of teaching Czech as a second/foreign language. With regard to the set goal, an online tool was created based on the use of word-formation meaning for clarifying vocabulary when teaching foreigners. In addition, such use of word formation and word-formation meaning fulfills one of the basic didactic principles when unknown subject matter should be clarified by familiar subject matter. This is the case here because the bases of most derived words are words that belong to language level A1 or A2: a) non-derived words that belong to language level A1 or A2, e.g. *bydlet* ‘to live’ → *bydliště* ‘residence’, *učit* ‘to teach’ → *učitel* ‘teacher’; b) frequently used derived words that belong to language level A1 or A2, e.g. *učitel* ‘teacher’ → *učitelka* ‘(female) teacher’, *podnikatel* ‘businessman’ → *podnikatelka* ‘businesswoman’. In addition, it can be assumed that by long-term and regular use of the tool, a foreign student could master the basic word-forming principles in Czech which are necessary for active word formation.

The idea of using word formation in teaching vocabulary is not new, but until now there has not been a specific tool (methodology) that would allow word formation to be systematically applied to the teaching of foreigners.¹

The goal of the SLAN project is to process Czech word formation for the purposes of teaching Czech as a second/foreign language:

- a) to describe the word-forming processes in the derivation of nouns from two points of view — for foreign students, who are not expected to have linguistic knowledge, and for teachers, who are expected to have knowledge of linguistic terminology and curricular documents² defining the individual language levels and competences of students;
- b) to create a tool (SLAN software) that will enable lists of derived nouns appearing in Czech language textbooks for foreigners at levels A2–B2 and online exercises focused on individual word-forming phenomena of the Czech language to be generated, e.g. creation of feminine nouns, creation of action nouns and their results.

The target group of the SLAN project is Russian-speaking foreigners (the mediation language is or can be Russian), who make up at least a third of all legally resident foreigners in the Czech Republic.³

3 PLAN OF IMPLEMENTATION

The implementation of the project started in June 2020, and in December of the same year the UčebKo textbook corpus was built on the SketchEngine platform (<https://ske.fi.muni.cz>), which contains 3 sub-corpora: UčebKo-A2 (3 Czech textbooks for foreigners, level A2), UčebKo-B1 (3 Czech textbooks for foreigners, level B1), and UčebKo-B2 (3 Czech textbooks for foreigners, B2 level). The methodology for building the UčebKo corpus is described in Válková (2021). Below we present the size of the UčebKo corpus according to Válková (2021:634):

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- 1 The position of word formation in the teaching of Czech as a foreign language is discussed, for example, by Nádeníček (2017). DeriNet (Lexical Network of Word-Formation Relations in Czech) was developed as a tool for processing the word formation of Czech (and other languages) at ÚFAL UK (Institute of Formal and Applied Linguistics, Charles University), see Vidra et al. 2021. However, DeriNet works with a derivation database, which for the purposes of teaching Czech as a second/foreign language is too extensive and does not take into account the language level of individual derivatives. As another source of derivational data for Czech we can also mention Derivancze — Derivational Analyzer of Czech (Pala and Šmerk 2015), which is intended primarily for scientific purposes, not for teaching Czech as a foreign language.
 - 2 E.g. Common European Framework of Reference (CEFR). CEFR is available in Czech here: <https://www.msmt.cz/mezinarodni-vztahy/spolecny-evropsky-referencni-ramec-pro-jazyky>.
 - 3 Current statistics are available on the website of the Ministry of the Interior of the Czech Republic: <https://www.mvcr.cz/clanek/cizinci-s-povolenym-pobytem.aspx>.



	UčebKo-A2	UčebKo-B1	UčebKo-B2
number of words	91,561	122,604	89,697
number of sentences	15,099	16,993	9,739
average sentence	6 words / sentence	7 words / sentence	9 words / sentence

TABLE 1. The size of the UčebKo corpus.

On the basis of the corpus data, nouns were processed from 2021 to 2022, but only those nouns that are derived either by suffixation (*učitel* ‘teacher’ ← *učit* ‘to teach’⁴) or by prefixation (*nadváha* ‘overweight’ ← *váha* ‘weight’) were processed. Nouns derived by circumfixation (e.g. *náměstí* ‘square’ ← *město* ‘city’), univerbization (*mikrovlnka* ‘microwave’ ← *mikrovlnná trouba* ‘microwave oven’, *panelák* ‘block of flats’ ← *panelový dům* ‘block building’) or composition (*samoplátce* ‘self-payer’ ← *sám, plátce/platit* ‘self, payer/pay’) are not analyzed within the SLAN software. According to Bozděchová (2016: 2875), “a typical feature of Czech is the high degree of functional homonymy and the polysemy of affixes”⁵, which is also reflected in the UčebKo corpus.

4 LINGUISTIC DATA

The results of the corpus data processing are presented below in Tables 2–4. The semantic categories are sorted in descending order according to the number of lemmas. An example would be the most frequent noun from the UčebKo corpus corresponding to the selected semantic feature.

category of nouns	number of suffixes	number of lemmas	most represented suffixes (number of lemmas)	examples of nouns (language level)
action nouns	19	691	-ní/-tí ⁶ (464)	<i>představení</i> ‘performance, show, presentation’ (A2, B1, B2) ← <i>představen/představit</i> ‘to introduce, to present’
personal nouns (masculine animate)	26	417	-ík/-ník (73)	<i>zákazník</i> ‘customer, client’ (A2, B1, B2) ← <i>zakázka</i> ‘order’

⁴ See Válková and Sokolova (2021) for more details on the processing of nouns (on the example of personal names).

⁵ See also earlier work by Janda (2010b, 2011) and Čermák (2012), who states that the polyfunctionality of suffixes and a large number of variants are two basic features of Czech derivation. The most functionally loaded suffixes are the following (they are listed in descending order): *-ka, -ina, -ák, -ek, -ice* (in the spoken language it is the suffix *-ák*) (2012: 58).

⁶ These action nouns are usually associated with a form of the passive participle, e.g. *představení* ‘performance, show, presentation’ ← *představen* ‘presented’. In this case, the



category of nouns	number of suffixes	number of lemmas	most represented suffixes (number of lemmas)	examples of nouns (language level)
quality, state	6	202	-ost/-nost (173)	<i>radost</i> 'pleasure' (A2, B1, B2) ← <i>rád</i> 'glad about sth', <i>zkušenost</i> 'experience' (A2, B1, B2) ← <i>zkušený</i> 'experienced'
diminutives	15	186	-ek (77)	<i>dárek</i> 'gift, present' (A2, B1, B2) ← <i>dar</i> 'gift, present'
names of female persons	3	162	-ka* ⁷ (125)	<i>kamarádka</i> (A2, B1, B2) 'female friend' ← <i>kamarád</i> 'friend', <i>manželka</i> (A2, B1, B2) 'wife' ← <i>manžel</i> 'husband'
place nouns	13	135	-na ⁸ (43)	<i>kavárna</i> 'café' (A2, B1, B2) ← <i>káva</i> 'coffee', <i>knihovna</i> 'library' (A2, B1, B2) ← <i>kniha</i> 'book'
object/patient nouns	16	115	-ka* (38)	<i>fotka</i> 'photo' (A2, B1, B2) ← <i>fotit</i> 'to take photos'
instrument nouns	9	48	-čka/-ka* (14)	<i>motorka</i> 'motorcycle' (A2, B1, B2) ← <i>motor</i> 'motor, engine'
numbers	4	30	-ka* (21)	<i>desítka</i> '(number) ten' (A2, B1, B2) ← <i>deset</i> 'ten'
attributive nouns (designation of languages)	2	29	-ina* (28) ⁹	<i>angličtina</i> 'English language' (A2, B1, B2) ← <i>anglický</i> 'English'
collective nouns	3	14	-ctvo/-stvo (9)	<i>obyvatelstvo</i> 'population, inhabitants' (A2, B1, B2) ← <i>obyvatel</i> 'inhabitant'
fees	2	10	-né (9) ¹⁰	<i>jízdné</i> 'fare' (A2, B1, B2) ← <i>jízda</i> 'ride, journey, trip'
materials	3	8	-ina* (6)	<i>tekutina</i> 'fluid' (B1, B2) ← <i>tekutý</i> 'fluid' <small>noun</small> / <small>adj</small>

formant is only -í. However, they are also derived from verbs that do not have the passive participle, e.g. *spaní* 'sleeping' ← *spát* 'to sleep', *stárnutí* 'ageing' ← *stárnout* 'to age', so the formant is usually -ní/-tí. We use this formant for students of Czech as a foreign language because it allows them to identify this type of noun better than the -í formant. If the base verb has a passive participle, we use both the passive participle and the infinitive as base words.

- 7 Homonymous suffixes are marked with (*). In the case of data from the UčebKo corpora, these are the two most frequent homonymous suffixes -ka and -ina.
- 8 We understand the suffixes -árna, -ovna as variants of the suffix -na (Petr 1986: 284; Štícha 2018: 376–382).
- 9 The only example of a derivative with the suffix -a is *latina* 'Latin language' (B1, B2) ← *latinský* 'Latin'.
- 10 The only example of a derivative with the suffix -ovné is *poštovné* 'postage' (B1, B2) ← *pošta* 'post (office), mail'.



category of nouns	number of suffixes	number of lemmas	most represented suffixes (number of lemmas)	examples of nouns (language level)
singulatives	4	5	-ina* (2)	potravina 'foodstuff' (A2, B1, B2) ← <i>potrava</i> 'food, nourishment'
augmentatives	1	1	-isko (1)	psisko 'dog _{aug} ' (B2) ← <i>pes</i> 'dog'
other		53		
TOTAL:		2,106		

TABLE 2. Nouns in corpus UčebKo, filter: ending with.

The Other category includes nouns derived by suffixes that cannot be classified in another category, e.g.:

1. Feminine nouns with the suffix *-ka* derived from other feminines by processes typical of diminutives, but which are not diminutives in their lexical meaning: *bouřka* 'storm' (same meaning as the word *bouře*), *půlhodinka* 'half an hour' (same meaning as the word *půlhodina*), *půlka* 'half' (same meaning as the word *půle*), *sklenka* 'glass' (same meaning as the verb *sklenice*); they differ from the base words in their colloquialism or emotional colouring.
2. Feminine nouns with the suffix *-ka* derived from other feminines by processes typical of diminutives which are not diminutives in their lexical meaning: *kabelka* 'handbag' (a different meaning than the word *kabela* 'bag'), and also *barborka* 'twigs of cherry or apple trees which are cut on St. Barbara's Day' (from the proper name *Barbora*); also, e.g. *čárka* 'comma', *dušičky* 'All Souls' Day', *historka* 'story', *kůrka* 'crust', *pomůcka* 'tool', *stolička* 'stool', *stránka* 'page', and *tkanička* 'shoelace'.
3. Nouns with the suffix *-ka* derived directly from verbs, i.e. not as gender-marked names: *servírka* 'waitress' (from the verb *servírovat* 'to serve'). These are feminine occupational names that do not have a masculine occupational name as a base word.
4. Nouns with the suffix *-ost* which are derived from adjectives and have an abstract meaning, but cannot be evaluated exclusively as names of qualities, e.g. *blbost* 'nonsense', *malíčkovost* 'triviality', *pitomost* 'stupidity', *samozřejmost* 'commonplace'. On the basis of their primary meaning of a quality, another meaning is created when they are used — the designation of a fact with this quality.
5. Nouns ending in *-ní/-ti* derived from verbs that can have different meanings, e.g. action noun and other meaning. We will present contexts from the UčebKo corpus: a) *Které oslovení je v motivačním dopise vhodné/nevhodné?* (B1) 'Which form of address is appropriate/inappropriate in a cover letter?'; b) *Při oslovení bychom měli správně použít a vyslovit jméno osloveného člověka a nesmíme zapomenout ani na tituly* (B2) 'When addressing someone, we should correctly use and pronounce the name of the addressed person and we must not forget their titles/degrees'.



category of nouns	number of suffixes	number of lemmas	most represented suffixes (number of lemmas)	examples of nouns (language level)
action nouns	3	3	- ¹¹	<i>podnájem</i> (A2, B1, B2) 'lodgings' ← <i>nájem</i> 'hire, rent', <i>předprodej</i> (A2, B1, B2) 'advance sale' ← <i>prodej</i> 'sale', <i>souhra</i> (B1, B2) 'harmony, coincidence' ← <i>hra</i> 'play, game, drama'
personal nouns (masculine animate)	6	12	pra- (7)	<i>prarodič</i> (A2, B1, B2) 'grandparent' ← <i>rodič</i> 'parent'
place nouns	5	5	-	<i>předsíň</i> (A2, B1, B2) 'entrance hall' ← <i>síň</i> 'hall', <i>veletrh</i> (A2, B1, B2) 'trade fair' ← <i>trh</i> 'market, fair', <i>multikino</i> (B1, B2) 'multi-screen cinema' ← <i>kino</i> 'cinema', <i>mikroregion</i> (B1, B2) 'microregion' ← <i>region</i> 'region', <i>prales</i> (B2) 'primeval forest' ← <i>les</i> 'forest'
quality, state	4	6	nad- (2), sou- (2)	<i>nadváha</i> (A2, B1, B2) 'overweight' ← <i>váha</i> 'weight', <i>soulad</i> (B1, B2) 'harmony, accordance' ← <i>lad</i> 'harmony'
TOTAL:		26		

TABLE 3. Nouns in corpus UčebKo, filter: starting with¹².

	feminine	neuter	masculine animate	masculine inanimate	TOTAL:
suffixal derivatives	869	634	431	172	2,106
prefixal derivatives	6	5	9	6	26
TOTAL:	875	639	440	178	2,132

TABLE 4. Numbers of lemmas according to grammatical gender.

There are also cases where one word form is processed in the SLAN software as two homonymous lemmas that differ both in terms of meaning and language level, see Tab. 5.

¹¹ The sign (-) means that each prefix is represented only once in the UčebKo corpus.

¹² These are cases of word formation of nouns from nouns by prefixes with the same meaning which is modified by the prefix.



word form	sense 1	sense 2
	action noun	means of action
furnishing/ device	<i>Co potřebujeme k zařizení bytu?</i> (B2) 'What do we need for furnishings of a flat?'	<i>mobilní zařízení, elektronická zařízení</i> (A2, B1, B2) 'mobile device, electronic device'
shower	<i>dát si pořádnou sprchu</i> (B1) 'to take a proper shower'	<i>koupelna se sprchou</i> (A2, B1, B2) 'bathroom with shower'
	action noun	object
feeding	<i>komentované krmení</i> (B1, B2) 'commented feeding'	<i>miska s krmením</i> (B2) 'bowl with feed'

TABLE 5. Homonymous lemmas in SLAN software.

Sometimes in the UčebKo corpus a word is documented in only one of the possible meanings; based on comparison, we also list the meanings that occur in the synchronous subcorpus syn2020 within the Czech National Corpus (Křen et al. 2020), see Tab. 6.

lemma	meaning in UčebKo (language level)	further meaning in syn2020
exhibition	place noun	action noun
	<i>navštívit výstavu</i> (A2, B1, B2) 'to visit an exhibition'	<i>výstava lidového umění</i> 'folk art exhibition'
emergency	place noun	quality, state
	<i>jít na pohotovost</i> (A2, B1, B2) 'to go to the emergency room'	<i>vyhlásit stav pohotovosti, být v plné pohotovosti</i> 'to declare a state of emergency, to be on full alert'
separation/ department	place noun	action noun
	<i>studijní oddělení, vedoucí oddělení</i> (A2, B1, B2) 'study department, head of department'	<i>brzké oddělení od rodiny</i> 'early separation from the family'

TABLE 6. Comparison of the occurrence of individual lemmas in the UčebKo and syn2020 corpora.

5 CURRENT STATE OF IMPLEMENTATION

Currently, a pilot version of the SLAN web interface (<https://slan.ped.muni.cz>) is deployed which works in three language versions (Czech, English, Russian), each of which contains 2,132 nouns. Here it is possible to choose the language level (A2–B2 according to CEFR), the word-formation meaning (e.g. feminine nouns, action nouns), and the desired word-formation element (starting with = prefix or ending with = suffix). At the same time, it is possible to choose the language in which the grammatical features are to be explained or the phonic alternations. The software is available in two modules (I am a student, I am a teacher), and each module has different options for displaying the searched information, see Fig. 1–2 below.

The screenshot shows the SLAN interface for a student user. On the left, there are search filters: 'chci úroveň:' with radio buttons for A2 (selected), B1, and B2; 'chci to vysvětlit v:' with radio buttons for češtině (selected), ruštině, and angličtině; and dropdown menus for 'má význam:' (objekty), 'začíná na:', and 'končí na:'. A 'Vyhledat' button is at the bottom of the filters. On the right, a list of word-formation pairs is shown: přiložit → příloha, smluvit → smlouva, ozdobit → ozdoba, (letět)* → leták, brambora → bramborák, jíst → jídlo, přát → přátelství, (zavázat)* → zavazadlo, rám → rámeček, (nabýt)* → nábytek, připravit → přípravek, (řezat)* → řízek, vyrobit → výrobek. A highlighted box for 'leták' contains: 'rod: střední (to)', 'příklady: pojistění, zavazadél proti ztrátě (A2), ztracené zavazadlo, sbalit zavazadlo, doprava zavazadél, lístek k zavazadlu', and 'pozor: mění se é → a'.

FIGURE 1. Module I am a student, language level: A2, language of explanation: Czech, word-formation meaning: objects.

The screenshot shows the SLAN interface for a teacher user. On the left, the search filters are identical to Figure 1. On the right, a table displays word-formation pairs with detailed information. The table has columns for 'anims header učebníanims header info', 'anims header báse', 'anims header výampřes', and 'anims header levelanims header topic'. The rows are: 'příloha' (rod: ženský (ta), příklady: maso s přílohou (A2), brambory jako příloha, poslat přílohu, kulturní příloha, pozor: mění se l → i, ž → h), 'smlouva' (rod: ženský (ta), příklady: pracovní smlouva (A2), kupní smlouva, podepsat smlouvu, návim smlouvy, pozor: mění se u → ou), 'ozdoba' (rod: ženský (ta), příklady: bízami ozdoba (A2), ozdoby s květinovými motivy), 'leták' (rod: mužský neživotný (ten), příklady: reklamní leták (A2), příbalový leták, leták, neabít zozdí, pozor: slovo leták nejde vysvětlit pomocí významu slova leteč), 'bramborák' (rod: mužský neživotný (ten), příklady: řízek v bramboráku (A2), sýr v bramboráku, usmazit bramborák), 'jídlo' (rod: střední (to), příklady: české jídlo (A2), obilné jídlo (A2), domáci jídlo (A2), recept na jídlo (A2), stánek s jídlem (A2)), and 'přátelství' (rod: střední (to), příklady: bílé přátelství (A2), barviné přátelství (A2), číst přátelství).

FIGURE 2. Module I am a teacher, language level: A2, language of explanation: Czech, word-formation meaning: objects.

All options and filters of both modules are described in detail in the user manual (Sokolova et al. 2023), which can be downloaded from the SLAN website.

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