

# Entries in *Croatian Web Dictionary – Mrežnik*

Maja Matijević, PhD.

Institute of Croatian Language and Linguistics

TEI Introductory School, Graz 2019



# About me

- master of Croatian Language and Literature and Information and Communication Science  
(Faculty of Humanities and Social Sciences in Zagreb)
- PhD. at the Department of Croatian Language (Croatian philology in intercultural context): *Semantic relations in web dictionaries*
- currently working on a *Mrežnik* project at the Institute of Croatian Language and Linguistics

# *Croatian Web Dictionary – Mrežnik*

1 March 2017 – 28 February 2021

## **Institute of Croatian Language and Linguistics**

- free, monolingual, hypertextual web dictionary of standard Croatian
- 10,000 most frequent entries from hrWaC (Croatian web corpus)
  - adult native speakers of Croatian
    - goal: 10,000 entries
  - schoolchildren
    - goal: 3,000 entries
  - non-native speakers of Croatian
    - goal: 1,000 entries



# Entries

- adult native speakers of Croatian; 10,000 entries (corpus)
  - accentuation of whole paradigm
  - definition
  - corpus-based examples
  - collocations, idioms, normative remark, references (synonyms, antonyms, etc.), possible subentries, links to other content
- schoolchildren; goal: 3,000 entries (extracted from textbooks)
  - place of accent & decomposition into syllables
  - simple definition & examples
  - usage advice
- non-native speakers of Croatian; goal: 1,000 entries
  - pronunciation of lemma
  - definition & simple examples
  - usage advice
  - references

[Barbara] [Domagoj] **banana** (banane) imenica

Rastavljanje na slogove: ba-na-na

<sup>1</sup> **Banana je tropska voćka slična palmi s ukusnim plodovima.**

*Drvo banane voli toplinu i ne podnosi temperature niže od 11 Celzijevih stupnjeva.*

<sup>2</sup> **Banana je duguljasti jestivi plod te voćke koji ima debelu žutu koru.**

*sladoled od banane, torta od banane*

Sve:

banána **banana** im. ž. (G banáně, DL banáni, A banánu, I banánom; mn. NA banáne, G banánā, DLI banánama)

<sup>1</sup> bot. **Banana je visoka zeljasta biljka tropskih krajeva nalik na palmu koja ima velike listove i cvjetove skupljene u cvat.**

- *Kako je krenula klima i temperature, možda postanu aktualni i nekadašnji planovi vlastodržaca iz pedesetih godina o uzgoju pamuka i kikirikija, a umjesto kukuruza možda se zasade banane.*

- *Prije nekoliko godina banane su počele davati plodove; ipak, nikada nisu uspjele sazreti pa Ivica ne ubire plodove.*

<sup>2</sup> bot. **Banana je duguljasti mesnati i hranjivi plod istoimene biljke obavijen debelom žutom korom.**

- *Zato na kraju, za okrepu nakon ronjenja, preporučujem palačinke i limunadu, kolač i sok, vodu i bananu ili barem samo limunadu.*

- *Banane su prepune kalij, koji aktivira izbacivanje vode iz tijela; dobre su i groždice ili svježe grožđe tijekom ljeta, a i dinja, lubenica, grejp (a i ostali citrusi), brusnice i sve češći gost naših tanjura, slasni avokado.*

- *Odvijte tijesto, premažite ga polovicom nadjeva i na oba duža ruba stavite banane.*

- *Banane ne rastu na drveću, one rastu iz korijenaste strukture koju proizvodi jedna stabljika koja se nalazi iznad tla.*

Što se s bananom može? dodati je (u ostale sastojke), jesti je, kupiti je, oguliti je, staviti je (na biskvit, na vagu, u blender, u kolač, u mikser, u škrinju), uzeti je, voljeti je

Koordinacija: ananas i banane, banana i čokolada, banane i jagode, grožđe i banane, jabuke i banane, kruške i banane, naranče i banane,

{Joža; Kristian}

[Barbara] [Domagoj] **banana** im. ž. (G banane, D banani, A bananu, L o banani, I s bananom; mn. N

banane, G banana, D bananama, A banane, L o bananama, I s bananama)

Banana je žuto tropsko voće u obliku bumeranga.

- *Zelena banana nije ukusna.*

- *Banane u Hrvatsku stižu iz Afrike.*

- *Koliko košta kilogram banana?*

biti u banani

žarg. *Biti u banani* znači biti u problemima.

**banana** imenica

Rastavljanje na slogove: ba-na-na

schoolchildren

adult native speakers of  
Croatian

non-native speakers of  
Croatian

# Publishing and Gamifying *Croatian Web Dictionary – Mrežnik*



Josip Mihaljević, Institute of Croatian Language and Linguistics  
Introductory School on TEI  
Graz, 11 May 2019



# About me



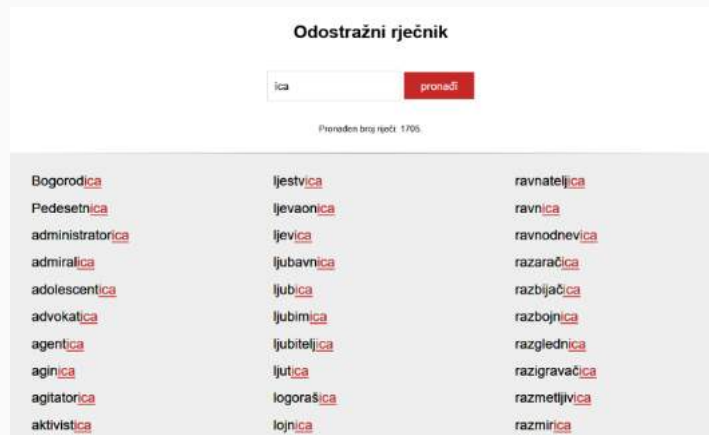
- third year PhD. student at Department of Information and Communication Science
- currently working at Institute of Croatian Language and Linguistics on project *Croatian Web Dictionary – Mrežnik*
  - web design
  - creating web games and other interactive content for language learning or promoting language contents
  - web dictionary creation
- my PhD title: Conceptual Framework for Gamification of a Croatian Web Dictionary

# Dictionary creation

- dictionary *Mrežnik* is created in TLex (aka TshwaneLex)
  - online demo version of dictionary is published as multiple .html pages that are interconnected (page for every dictionary entry and index page for searching entries)
- web reverse dictionary was also created as an addition
  - works as a single page



Mrežnik



reverse dictionary



# Game creation for dictionary

- dictionary will have three separate modules (general, for children, for foreigners) which allows creating many different games for different type of learners
- many different game types which use different gamification elements (levels, leaderboards ect.)
  - quizzes
  - memory
  - crosswords
  - tic-tac-toe
  - scrabble
  - ect.
- games are created for web browsers
  - most of theme can be played on mobile devices thanks to responsive design



example of a content for Arabic speakers

# Games for learning spelling



Type the word

Vilinski prah sve smanjuje. Pretvorit će **cvijet** u **cvjetić**. Napiši kako su se smanjuju i ostale riječi.

rijeka **rijećica** ✗ **rječica**

snijega **snježić** ✓

**bodovi: 1 od 2**



Fill in the blanks

# Games for learning grammar

## Razvrstavanje glagolskih oblika

FUTUR II.	PLUSKVAMPERFEKT	FUTUR I.
budete igrale		
bila je vozila	popit ćemo	bude popio
bio si igrao	će igrati	bile su popile
vozit ćete	budem vozio	

preostale sekunde: 42

## Razvrstavanje glagolskih oblika

FUTUR II.	PLUSKVAMPERFEKT	FUTUR I.
budete igrale +1	bile su popile +1	popit ćemo +1
bude popio +1	bila je vozila +1	vozit ćete +1
će igrati FUTUR I.	bio si igrao +1	
budem vozio +1		

preostale sekunde: 28

idući zadatak

## Classification of verbal forms

1/7.

\_\_\_\_\_ bih ići u kino, ali prvo moram dovršiti zadaću.

ostalo je još 2 sekunde za odgovor

htio htjeo

**Netočno**

Točan odgovor je:

**Htio** bih ići u kino, ali prvo moram dovršiti zadaću.

Kod glagola koji u infinitivu završavaju na **-jeti** (npr. **voljeti**) u obliku **glagolskoga pridjeva** **radnog** za **muški rod jednine** **je** se mijenja u **i** ispred nastavka **-o** **vid-i-o** > **vidio**

U svim ostalim licima i rodovima zadržava se **je** **vidjela, vidjelo vidjeli, vidjele, vidjela**

dalje

**Točno**

+ 16

Kod glagola koji u infinitivu završavaju na **-jeti** (npr. **voljeti**) u obliku **glagolskoga pridjeva** **radnog** za **muški rod jednine** **je** se mijenja u **i** ispred nastavka **-o** **vid-i-o** > **vidio**

U svim ostalim licima i rodovima zadržava se **je** **vidjela, vidjelo vidjeli, vidjele, vidjela**

dalje

## Quiz with common language mistake

# Games for learning grammar

**1/12.**  
**peći**  
**imperfekt 1. lice mn.**

mi pe[...]

22

**Netočno**  
Točni odgovori mogu biti: pečismo, pečiste  
Neki glagoli mogu imperfekt tvoriti na dva načina: nastavcima  
-gañ, -gañe... i -pek, -pakañ ili nastavcima -jañ, -jate...  
-pek -> jañ -> pečati  
Kad glagol ču konsonant na k, g ili h imperfekt  
tvorim nastavcima -gañ, -gañe, -gañmo, -gañte, -gañu  
primoli se palatalizacija  
Kad glagol ču konsonant žr, š, ž ili h imperfekt  
tvorim nastavcima -jañ, -jañe, -jañmo, -jañte, -jañu, primoli  
se sibilizacija

**Točno**  
+ 20  
Do koje je glasovne promjene došlo pri tvorbi oblika pečati?  
do jofacije  
do palatalizacije  
do sibilizacije

**Točno**  
+ 30  
Do koje je glasovne promjene došlo pri tvorbi oblika pečati?  
Neki glagoli mogu imperfekt tvoriti na dva načina: nastavcima  
-gañ, -gañe... i -pek, -pakañ ili nastavcima -jañ, -jate...  
-pek -> jañ -> pečati  
Kad glagol ču konsonant na k, g ili h imperfekt  
tvorim nastavcima -gañ, -gañe, -gañmo, -gañte, -gañu  
primoli se palatalizacija  
Kad glagol ču konsonant žr, š, ž ili h imperfekt  
tvorim nastavcima -jañ, -jañe, -jañmo, -jañte, -jañu, primoli  
se sibilizacija

**Rezultati igre za jednostavne glagolske oblike  
razina s vremenskim ograničenjem od 20 sekundi**  
nova igra

	Vrijeme predaje	Igrač	Bodovi
1.	15. 4. 2019. 13:34:16	@Daria	94
2.	16. 4. 2019. 12:07:30	@Bruno	81
3.	15. 4. 2019. 12:59:20	Jusuf	23
4.	15. 4. 2019. 13:04:25	Jusuf	23
5.	15. 4. 2019. 13:27:20	@Bruno	-60

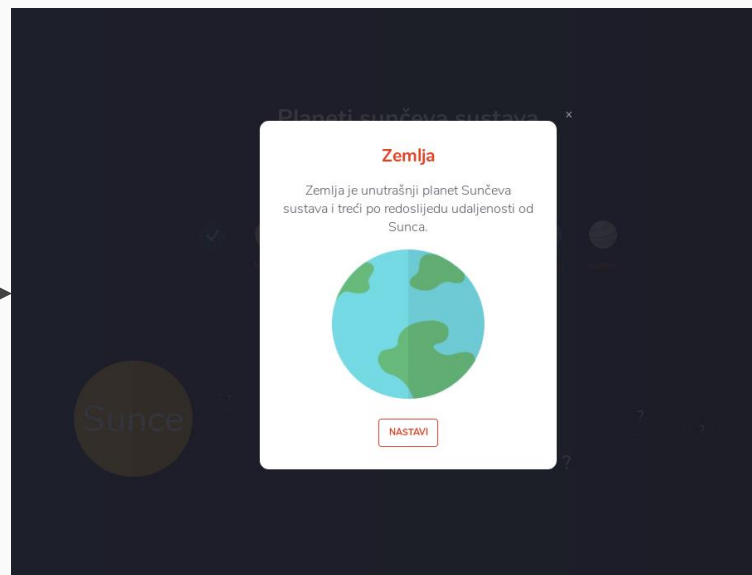
Podijeli igru!

f t in

Enter verb forms

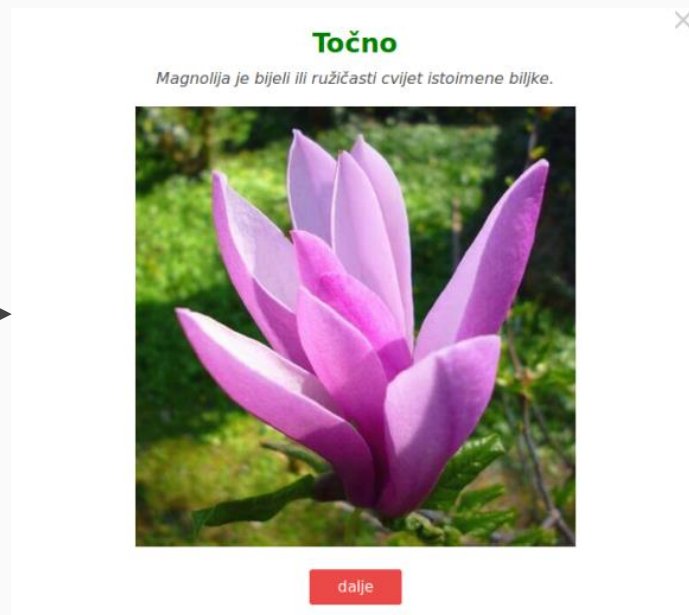
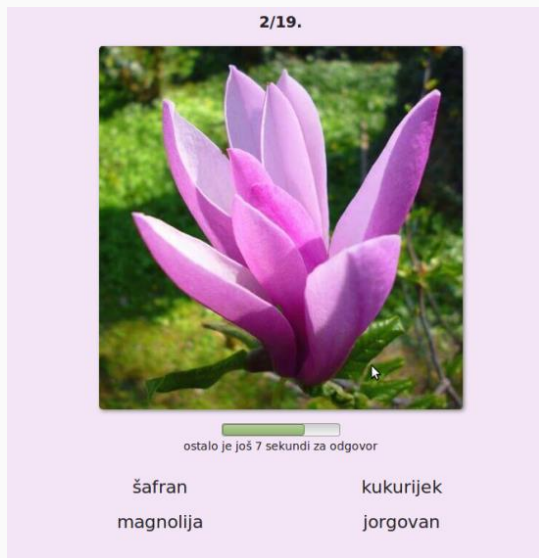
# Games for learning word meanings

- drag and drop games for learning and categorizing animals, food, plants, [trees](#) etc.

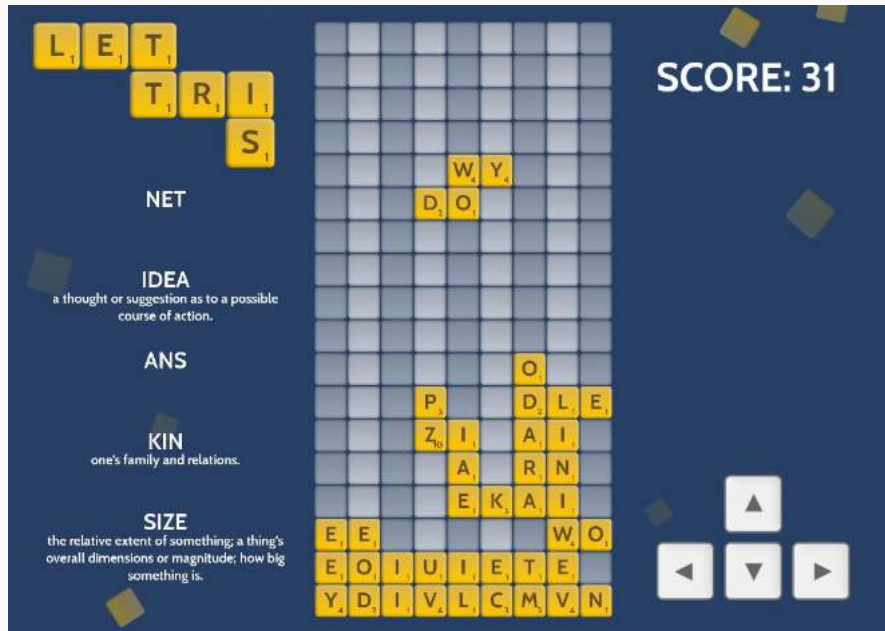


# Games for learning word meanings

- quizzes
- in some quizzes players can guess the correct word and then get its definition



# Games for finding words



Tetris where you match words



find words in falling blocks

# Games for finding words



Scrabble



Boogle

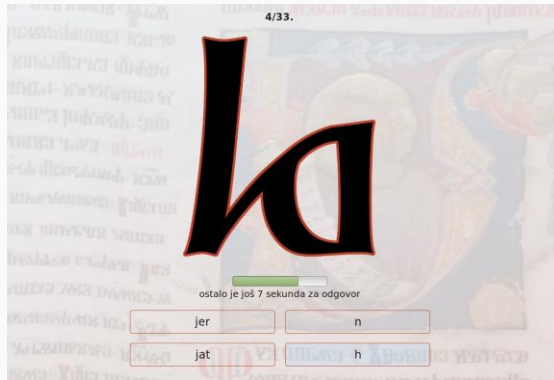


# Games for learning ancient and special alphabet

- games for learning the Glagolitic script
- the oldest known Slavic alphabet (created in 9<sup>th</sup> century by Saint Cyri)
- it was actively used in Croatia until the middle of the 19<sup>th</sup> century



memory game



quiz



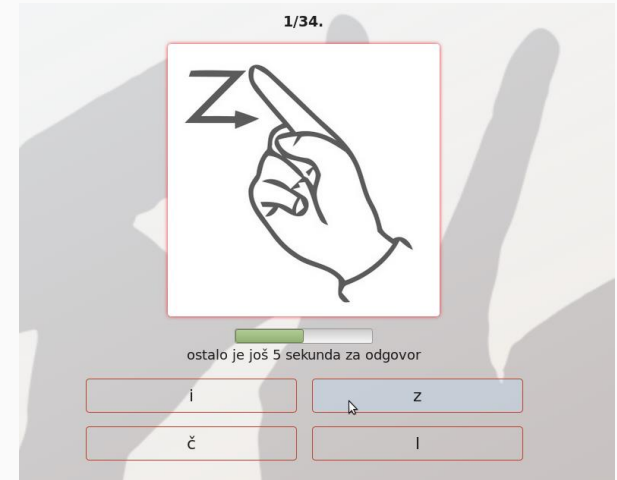
web application for  
writing Glagolitic

# Games for learning ancient and special alphabet

- games for learning Braille and sign language



quiz for Braille



quiz for sign language

# Literature

- Deterding, Sebastian et al. 2011. From Game Design Elements to Gamefulness: Defining Gamification. *Proceedings of the 15th International Academic MindTrek Conference: Envisioning Future Media Environments*. Ur. Lugmayr, Artur. Association for Computing Machinery. New York.
- Pelling, Nick. *The (short) prehistory of "gamification"...Funding Startups (& other impossibilities)*. <https://nanodome.wordpress.com/2011/08/09/the-short-prehistory-of-gamification/> (Retrieved 5 May 2019)
- Strmečki, Daniel; Bernik, Andrija, Radošević, Danijel. 2015. Gamification in E-Learning: Introducing Gamified Design Elements into E-Learning System. *Journal of Computer Sciences*, 11/2. 1108–1109.
- Stjepan Damjanović. 2003. *Staroslavenski jezik*. Hrvatska sveučilišna naklada. Zagreb.
- Gadžija, Sofija et al. 2014. *Hrvatski crkvenoslavenski jezik*. Hrvatska sveučilišna naklada, Staroslavenski institut. Zagreb.
- Hudeček, Lana; Mihaljević, Milica. 2017. The Croatian Web Dictionary Project – Mrežnik. *Electronic lexicography in the 21st century: Proceedings of eLex 2017 conference*. Lexical Computing CZ s.r.o. Brno.
- Wiazowski, Jaroslaw. 2014. Can Braille Be Revived? A Possible Impact of High-End Braille and Mainstream Technology on the Revival of Tactile Literacy Medium. *Assistive Technology*, 26/4, 227.
- Lewis, M. Paul; Simons, Gary F.; D. Fennig, Charles. 2013. *Ethnologue: Languages of the World*. SIL International, Dallas
- Ashaari, N. S. et al.. 2016. Gamification Elements for Learning Applications. *International Journal on Advanced Science, Engineering and Information Technology*. 6/6, 868 – 873.

# Publishing and Gamifying *Croatian Web Dictionary – Mrežnik*



Josip Mihaljević, Institute of Croatian Language and Linguistics  
Introductory School on TEI  
Graz, 11 May 2019

