

Anishinaabemowin Analysis for Educators: Conjugator

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Goals



1. Introduce our new conjugator tool
 - a. Including a grammar walk-through
2. Highlight a core application: editing assistance
3. Review prior feedback
4. Hear your thoughts and experiences

Quick Start Overview

What is a conjugator tool?



Conjugating is essentially adding information to a word

Usually with prefixes and suffixes

Dictionaries give you the words, but usually not how to add to them

“I know that *waabmaa* means “see somebody’ ...

But ‘I see you’ is not *niin waabmaa giin* -> it is *gwaabmin*

A conjugator tool calculates that ‘I see you’ is *gwaabmin*.

And so on

It is not perfect, but it is good

The tool



<https://bowersd.github.io/textAnalysis/conjugator.html>

Designed to get you going in 3-ish steps

1. Put in a dictionary entry
2. Select how you want to change it
3. Press “Do it!”

1. Find a word that you want to work with from the [Nishnaabemwin Online Dictionary](#)

Dictionary entry:

2. Select how you want to conjugate the word.

3. Click this button:

Step 1: Input dictionary entry

Funny thing about dictionaries:

you need to know how to spell a word before you can see how to spell it

The page tries to help with this problem

After you type the 4th letter, it guesses what word you might be looking for

Dictionary entry:

Suggested words: aabji'aa, aabjitoon, aabjichgan

And it lets you know when you go off track

Dictionary entry:

Suggested words: I'm sorry, I don't know any words that start with aabk

Step 1: Confirm dictionary entry

Big wrinkle: different words are conjugated differently

The tool needs to know what type of word it is dealing with

The “Confirm” button checks the word type. You can probably go to step 2.

Dictionary entry:

Confirm

Suggested words: aabjitoon

→ The word *aabjitoon* is a verb. You can go straight to the verb section in step 2. If you want more information about the specific word type, read on.

Specifically, *aabjitoon* is a verb describing an action done to something, like *naadin* 's/he fetches it'.

The technical description for this is a **Verb** that is **Transitive**, with an (**Inanimate**) object.

VTI is the abbreviation for this.

Be careful to follow any specific instructions for VTIs in step 2.

Step 2: Conjugation Options (nouns vs verbs)



Nouns and verbs have fairly different options for conjugation

-> Step 2 is split into a noun section and a verb section

You only have to fill out the section that is relevant to the word that you picked

2. Select how you want to conjugate the word.

Noun options:

... A bunch of options just for nouns ...

Verb options:

... A bunch of options just for verbs ...

Step 2: Noun Conjugation Options

Just a few options -> but >1,000 combinations of prefixes/suffixes!
If there are mutually exclusive choices, the option is a dropdown menu
Otherwise, the option is a checkbox

Who owns it (possessor): ▼

Are there several/is it less important/is it a place:

▼

Is it little or something you might call "ole": ▼

Is it broken or in a group you are calling to: ▼

- m form (nbizhkiim 'my cow' - possessive)
- ish form (mkiznish 'darn shoe' - pejorative)

Step 2: Verb Conjugation Options



Verbs don't have as many dropdown menus as nouns

But in a bit, I will show how navigating verb dropdown menus is trickier

Sentence type:

Who did it/who has the property described by the verb (subject, you must select an option for all verbs):

Who was it done to (object, only for VTA, VTI, VAIO):

- ba(n) form (nmadbiwba 's/he has sat' - action is finished, preterit)
- dig form (nmadbiwdig 's/he sits, I suspect' - statement is inferred/doubted, dubitative)
- sii form (nmadbisii 's/he doesn't sit' - negation; if command: "don't do it!")
- "Do it in a bit" (delayed imperative, cannot be combined with -sii form option)

Step 3: Do it!




When you click the “Do it!” button, a few things happen

The menu options become a ‘Broad Analysis’ (big-picture categories)

The ‘Broad Analysis’ becomes a ‘Narrow Analysis’ (Nish. version of big-picture categories)

The ‘Narrow Analysis’ becomes a predicted conjugated form

3. Click this button: 

Broad Analysis	aabjitoon VTI S:21PI O:0PI Neg Prt
Narrow Analysis	2+aabjitoon+VTI+Neg+1PI+Prt+0PI
Predicted form	gdaabjitoosiimnaabniin

Detailed Overview

When you have to sit up and focus

Tool design is focused on accessibility

-> move technical grammar 'under the hood', give concepts intuitive explanations

But you may eventually find yourself in the weeds

1.1 If there are several possible parts of speech for your word, select the one you want below. You may also select your desired spelling pattern.

Part of Speech (in this menu and elsewhere, somebody='smb.', something='sth.):

Default (the best guess as stated above) ▾

Default (the best guess as stated above)

NA (smb. alive, exe: aamoo 'bee')

NI (sth. not alive, exe: jiimaan 'boat')

NAD (smb. that must be "owned", exe: noos 'my father')

NID (sth. that must be "owned", exe: ndahiim 'my thing')

VAI (action done by smb., exe: nmadbi 's/he sits')

VII (action done by sth., exe: biidaasin 'it sails here')

VTI (action done to sth., exe: naadin 's/he fetches it')

VTA (action done to smb., exe: naagaa'aan 's/he delays him/her')

VAIO (action done by smb. to sth/smb. exe: noopon 's/he takes it for lunch')

2. Sel

Noun

Step 1.1 (a): Background on Noun Types



Fundamental split in nouns:

aamoo 'bee', *aamoog* 'bees' -> -g/-k plural

jiimaan 'boat', *jiimaanan* 'boats' -> -n plural

Nearly all -g/-k plurals are living; they are called animate nouns (**NA**)

The -n plurals cover everything else; they are called inanimate nouns (**NI**)

Less fundamental split in nouns:

noos 'my father' is a noun that must be owned

Such nouns are called dependent nouns (**NAD/NID**)

Step 1.1 (a): Background on Verb Types



Nouns are familiar: usually tangible and in some sense “real”

Verbs are more strange: how we say things about nouns

Once you combine a verb with nouns you have a sentence

How many nouns a verb combines with is really important

1 noun = intransitive (*the child sighs*)

2 nouns = transitive (*the child fears the dog*)

Given this verb split, and the fundamental noun split, -> 4 major verb types

Verb that is **Transitive** and done to **Animate** noun (VTA): *nwaabmaa aamoo* ‘I see the bee’

Verb done by **Animate** noun and is **Intransitive** (VAI): *dgoshin aamoo* ‘the bee comes’

Verb that is **Transitive** and done to **Inanimate** noun (VTI): *nwaabndaan jiimaan* ‘I see the boat’

Verb done by **Inanimate** noun and is **Intransitive** (VII): *dgosin jiimaan* ‘the boat comes’

Step 1.1 (a): Helper text available

The 'Confirm' button presents this information about parts of speech

Dictionary entry:

Suggested words: aabjitoon

The word *aabjitoon* is a verb. You can go straight to the verb section in step 2. If you want more information about the specific word type, read on.

Specifically, *aabjitoon* is a verb describing an action done to something, like *naadin* 's/he fetches it'.

The technical description for this is a **Verb** that is **Transitive**, with an (**Inanimate**) object.

VTI is the abbreviation for this.

Be careful to follow any specific instructions for VTIs in step 2.

Step 1.1 (b): Spelling Style

You can specify the flavor of spelling

Nishnaabemod - consistent between dialects & variant forms, but further from sound
aankod vs aankodoon

Nishnaabemat - closer to how the word sounds in the Odawa dialect
aan'kot vs aan'kodoon

Anishinaabemod - not really how anyone speaks anymore, but there for completeness
aanakod vs aanakodoon

Spelling pattern:


Select how you want to spell:

Options:

- Nishnaabemod (Eastern Ojibwa-Chippewa-Ottawa Dictionary style)
- Nishnaabemat (Nishnaabemwin Online Dictionary style)
- Anishinaabemod (Nishnaabemwin with dropped vowels restored)

Step 2 (a): Noun Options - Owner

Owner specification is informal for the most part

Who owns it (possessor): **No one** 

Are there several/is it less than one? **No**

Is it little or something you own? **No**


Is it broken or in a group yet? **No**

-m form (nbizhkiim 'my')

-ish form (mkiznish 'da')

options:

- No one
- Your
- Your guys's
- My
- Our (niinwi 'ours but not yours')
- Our (giinwi 'ours and yours')
- His/Her/It's ([Aan'kot] woosan 'Aan'kot's father')
- Someone else's (Aan'kot [woosan] danmoshniwan "Aan'kot's father's dog")
- Their
- Unspecified



Step 2 (a): Noun Options - Weakness of English



A challenge for informality: there are two types of “our” in Nishnaabemwin

“Our” where I own it with some people but you don’t -> *niinwi*

“No, kiddo, this is our bed, not yours”

“Our” where I own it with you -> *giinwi*

“Yes, kiddo, this is our house, so that means you have to do chores, too”

Comedy writers often set up awkward social scenes that rely on this ambiguity in English.

Another challenge: Nishnaabemwin marks “his/her” and “someone else’s”

If you have <1 animate, only one can be “important”, the others are “someone else”

Aan’kot woosan ‘Aan’kot’s father’

-> Aan’kot is “important”

-> *woosan* ‘his father’ has the “someone else” marker *-an*

Step 2 (a): Noun Errors



If you click “Do it!” and nothing happens, scroll down.

There might be an error message in a big pink box.

Skip to the end for a warning that isn’t intimidating computer-ese

This message covers a forgotten owner of a noun that must be owned

```
ValueError: NAD and NID nouns must be owned by someone, please specify the owner
```

This message covers a noun with an “I’m owned” marker but no owner

```
ValueError: The -m form means the noun is owned, but the owner has not been specified. Please specify the owner.
```

This message covers “his/her [animate]”, [animate] must be “less important”

```
ValueError: NA and NAD nouns that are owned by he/she/someone else must be marked as 'less important'
```

Step 2 (b): Verb Sentence Type

Verbs are conjugated differently depending on sentence type

Sentence type:	Main clause in a sentence (nmadbi 's/he sits' - independent) ▼
Who did it/who verbs):	<input type="text" value="You"/>
	Main clause in a sentence (nmadbi 's/he sits' - independent)
	Subordinate clause or Who/What/Where question (nmadbit 'if/that s/he sits' - conjunct)
	Command (nmadbin! 'sit!' - imperative)

I couldn't come up with a non-technical way to describe this
Hopefully examples make it approachable

Step 2 (b): Verb Subject

The different verb types allow different subjects

Who did it/who has the property described by the verb (subject, you must select an option for all verbs):

Who was it?	<input type="text" value="You"/>	
Who was it with?	<input type="text" value="You guys"/>	
<input type="checkbox"/> No one	<input type="text" value="I"/>	
<input type="checkbox"/> -ba(We (niinwi 'us but not you')	
<input type="checkbox"/> -dig	We (giinwi 'us with you')	doubted, dubitative)
<input type="checkbox"/> -sii	He/She (noos nmadbi 'my father sits')	do it!")
<input type="checkbox"/> "Do	Smb. else (woosan nmadbiwan 'his/her father sits')	m option)
	They	
lick t	^The above options do not work if the verb is VII^	
	It (jiimaan mchaa 'the boat is big')	
ng confi	Sth. else (jiimaan mchaani 'the other boat is big' - VII only)	e options above?
he spelli	Those (jiimaan mchaawan 'the boats are big')	
	Sths. else (jiimaan mchaawan 'the other boats are big' - VII only)	
Nar	^The above options only work if the verb is VII/VTA^	
low	Unspecified/Passive (naagaa'aa 's/he gets delayed' - only for VAI/VTA)	

Step 2 (b): Verb Object

The object specifications for the different verb types are trickier

Who was it done to (object, only for VTA, VTI, VAIO):

No one (verb is VII or VAI) ▾

- No one (verb is VII or VAI)
- You
- You guys
- Me
- Us (niinwi 'us but not you')
- Us (giinwi 'us with you')
- ^The above options only work if the verb is VTA^
- Him/Her (gnaagaa'aa Aan'kot "you delay Aan'kot")
- Smb. else (naagaa'aan Aankodoo "s/he delays Aan'kot")
- Them
- ^The above options do not work if the verb is VTI^
- It
- Those
- ^The above options do not work if the verb is VTA^

VTA

VTA, VAIO

VTI, VAIO

Step 2 (b): Verb Subject/Object Errors



You can't combine subject and object of the "same level"

"He sees him" is really "He sees someone else" or "someone else sees him"

waabmaan or *waabmigoon*

"I see us" is inexpressible (there's an "I" in the subject and object)

"The boat hits the dock" is inexpressible (there is an inanimate in the subject and object)

Combinations like these may trigger:

- An error message

- A silent correction

- A conjugation failure

Step 2 (b): Other Verb Errors



Commands require you/us (giinwi)/you guys as subject

“Eat your food”, is “really” saying “you eat your food!”

This option:

- "Do it in a bit" (delayed imperative, only works if a command is specified)

These options:

- ba(n) form (nmadbiwba 's/he has sat' - action is finished, preterit)
 - dig form (nmadbiwdig 's/he sits, I suspect' - statement is inferred/doubted, dubitative)
- can both be selected only if a subordinate sentence is specified

Use in Editing

Analyzer-Conjugator



If the analyzer fails to analyze a word, the conjugator can suggest a fix

3 examples:

Mii dash <gii-boozyaan>	'And so I boarded (the train)'
weshki-bmaadzijig <ji-noondmowaad>	'So that the young may hear it'
Gego wiin gwa naa <miizhshikaangen>	'Do not give it to us'

Analyzer-Conjugator: gii-boozyaan

Fixing *mii dash gii-boozyaan* ‘and so I boarded’ is pretty easy

But it is safe ground to illustrate the general process

Step 0: see the error:

Original Material:	mii	dash	gii- boozyaan
Narrow Analysis:	mii+Adv	dash+Adv	gii- boozyaan+?

Step 1: get a general idea of the meaning of the unanalyzed word

Mii and *dash* are really common sequencers, *gii-boozyaan* = ‘I boarded’

Analyzer-Conjugator: gii-boozyaan continued

Step 2: confirm the meaning in the *NOD*

gii-boozyaan -> *booz+yaan* 'board+I (subordinate)'

There can't be a verb 'booz' in the NOD, it has to be booz+i or booz+o ...

boozi vai

board [a vehicle or vessel], get on [a vehicle or vessel]

Step 3: enter the parameters into the conjugator:

NOD entry: boozi

Sentence type: subordinate

Subject: I

-no way to put in preverbs like *gii-*, so just leave that out-

Broad Analysis	boozi VAI S:1 Cnj
Narrow Analysis	boozi+VAI+Cnj+1
Predicted form	boozyaanh



Analyzer-Conjugator: ji-noondmowaad

weshki-bmaadzijig ji-noondmowaad ‘so the young may hear it’ is more subtle
Step 0: see the error:

weshki-bmaadzijig	ji-noondmowaad
PV/CCNJ+PV/ shki+bmaadzi+VAI+Cnj+3+Pcp+3PI	ji- noondmowaad+?

Step 1: get a general idea of the meaning of the unanalyzed word
Analyzer gives *bmaadzijig* as ‘live’... *ji-noondmowaad* = ‘that they may hear it’

Analyzer-Conjugator: *ji-noondmowaad* continued

Step 2: confirm the meaning in the *NOD*

ji-noondmowaad -> *noondm+owaad* hear (vti)+They (subordinate)
VTIs with *-m* in *NOD* end in *-aan*, it has to be *noondaan*

noondaan vti

hear sth.

Step 3: enter the parameters into the conjugator:

NOD entry: *noondaan*

Sentence type: subordinate

Subject: They

Object: It

-no way to put in preverbs like *ji-*, so just leave that out-

Predicted forms	noondm <u>a</u> waad
	noondmawaad

Analyzer-Conjugator: *ji-noondmowaad* discussion

Figuring out that *noondmowaad* is the VTI *noondaan* is pretty lucky

There is also VAI *noondam* ... and could there be a VTA *noondmaa*?

VAI *noondam* -> *noondmawaad* so you get basically the same answer

More importantly, is *ji-noondmowaad* 'wrong' and *ji-noondmawaad* 'right'?

Hard to hear the difference between <mow> and <maw>

Ji-noondmowaad is recommended for VTI in Valentine 2001 (p 313)

Ji-noondmawaad is recommended for VAI in Valentine 2001 (p 237)

But there isn't any discussion why

Ji-noondmowaad is recommended for both VAI & VTI in Nichols (1980 p. 303, 307)

A consistent vowel is what I expect

(this vowel is inserted, and languages tend to insert the same vowel)

I initially picked <a> because I was using Valentine and <a> insertion is less fancy than <o>

Future versions may do <o>

Analyzer-Conjugator: miizhshikaangen

miizhshikaangen 'do not give it to us' showcases more tricks

Skipping step 0 ...

Step 1: get a general idea of the meaning of the unanalyzed word

It just has to mean 'give',

And a VTA because Nishnaabemwin focuses on 'to us' (animate), rather than 'it'

Step 2: confirm the meaning in the *NOD*

This is a bit tricky ... the dictionary form will start with <*mii*>, but where will it end??

Also, lots of VTAs with <*zh*> have an <*n*> in the dictionary

That ends up paying off:

miinaa vta

give something to smb.

Analyzer-Conjugator: miizhshikaangen continued

Step 3: enter the parameters into the conjugator:

NOD entry: miinaa

Sentence type: command

Subject: You

Object: Us (niinwi)

... “No splash, captain” ...

The site currently throws a computer error

But even if I use the backdoor option at the bottom of the page, nothing:

Narrow analysis:

Do it!


Narrow Analysis	miinaa+VTA+Imp+Neg+1Pl+2
Predicted form	miinaa+VTA+Imp+Neg+1Pl+2+?

Analyzer-Conjugator: miizhshikaangen discussion

Failure like this is a reason to get in touch!

I built this tool using Valentine 2001, and here's p. 304

7.7.19 VTA Imperative, Prohibitive



	1s	1p	3s	3p
2s	_ishike	?	_aake	_aake
2l	—	—	_aasiidaa	_aasiidaanig
2p	_ishikego	?	?	?

Take home: these are tools, not oracles

Best to approach critically, dig a bit deeper

Not a reason for despair! This builds your expertise and improves tools

Also, ~50% of analyzer failures are easy to resolve like *gii-boozyaan*

~25% are hard like *miizhshikaangen*



Wrap Up

Responding to/collecting feedback



Major motivation for conjugator: people asked for it

Also, previous focus group asked us to prioritize more flexibility in analyzer

We are examining ways to do that

But as shown, the conjugator helps to interrogate the model's failures

Some possible future directions:

Language support:

- Modern prefixes (ndoo-)

- Iteratives

- Preverbs

- Preterit dubitatives don't quite work as advertised

Polish:

- More human-friendly error messages

- Dynamic menu generation

- Styling and graphics

Pedagogy: Explanations of ambiguities, other grammatical nuggets

Gchi-Miigwech

Huge thanks to you!

Also, Mary Ann Corbiere and Rand Valentine for letting us piggy-back on their dictionary work.

See my [Gchi-Miigwech](#) page for the many other people and institutions that have been involved at various other points.



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