## Nakaazdaa Dbaajmowinan

## Digitized and Analyzed Stories

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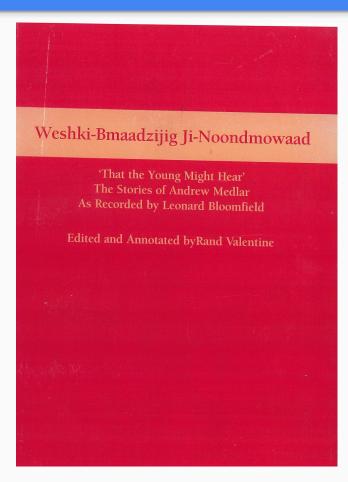
Anishinaabemowin Teg - March 2017

## Introduction

- Free, online, grammatically annotated Nishnaabemwin stories
  - Partnership between Mchigiing First Nation and Alberta Language Technology Lab (http://altlab.artsrn.ualberta.ca/)
- Roadmap:
  - Overview of texts
  - Searching and analyzing texts
  - Building a lesson from texts

## Overview of Texts

#### Source: Rand Valentine's Andrew Medler Collection



sa ngii-Nishnaabemtawaa maaba Menomini girl. (40) Mii dash nhendamaan geget sa gii-gkenmag sa Wjibwemod.

(41) Mii iw mnik ekdoyaan.

#### X. (bilingual, p. 113, analysis, p. 226)

- (1) Ngoding ngii-nokiinaaba giiwednong gbe-bboon. (2) Pii dash menookmig, Ziisbaakdoke-giizis egoojing, gii-gsinaamgad. (3) Gii-shpaagnagaa. (4) Nsing ekoozdeng gii-piitaagnagaa. (5) Ggizheb dash ngii-naadin nbiish. (6) Maa dash endhamaang dkibi aabtawdaaki yaamgad, besho yaag nbis. (7) Eni-dgoshnaan wiinaagmi iw nbiish endhamaang. (8) Gye go dbi wnjijwang ge wii go bkwebiigmi. (9) Maanoo dash go naa bngii aabtooshkin niimbaagning ngii-gwaabhaan. (10) Ngii-maajiidoon endaayaang.
  - (11) Ngii-wiindmawaag, Gnabaj waya wesiinh yaadig maa ndahbaaning.
  - (12) Aw dash kiwenziinh gii-giigdo, Aanii dash?
  - (13) Mii dash gaa-nag, Waabndamog ow nbiish ezhnaagwak.
  - (14) Aa nii nga-waabndaan, kido dash aw kiwenziinh.
  - (15) Wgii-waabndaan dash.
  - (16) Mii dash ekdod, Ji-bwaa-niizhgon'gak wii-bi-gchi-nimkiikaa.
- (17) Ngii-maajaa dash ge-nokiiyaan. (18) Miinwaa gaa-waabang eshkam gii-aabwaa. (19) Mii dash enaagshig eshkam gii-gchi-aabwaag. (20) Gye go mii gii-waabndamaan waasmowaad giw Nimkiig. (21) Eni-dbikak mii gii-noondwangdwaa Nimkiig, gye go gii-gchi-nimkiikaag. (22) Gegzhebaawgak goon kina gii-nkaabaawe. (23) Mii eta nbiish gaabmijwang gegzhebaawgak.

### Page Format: Monolingual, Bilingual Column, Glossary Facing Page

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#### Vocabulary

giizis na month (2)

goojin vai hang (2)

weather (2)

gve pc and (8)

kido vai say (14)

of feet deep (4)

maa pc there (6, 11)

[away] (10)

mnookmi (2)

mii pc and (13)

nbis ni lake (6)

ngoding pc once (1)

ni- prev there (7)

nii prn I, me (14)

naa pc indeed (9)

**aa** pc well (14) aabtawdaaki pc halfway up a hill (6) aabtooshkin pc half full (9) aanii pc how (12) aw prn that (anim.) (12, 14) bboon ni winter (1) besho pc near (6) bkwebiigmi vii be muddy water (8) **bngii** pc a little (9) daa vai live there (10) dash pc then; however; but so (2, 5, 6, 9, 12, 12, 13, 14, dbi pc wherever (8) dgoshin vai arrive (7) dkibi ni spring of water (6) egoojin= ch. form of goojin ekoozde= ch. form of koozde (4) endaa= ch. form of daa (10) endaha= ch. form of ndahan (6, 7) eni- ch. form of ni- (7) ezhnaagwa= ch. form of zhinaagwad (13) ga- prev future tense (14) gaa- ch. form of gii- (13) gbe- pren entire (1) ge pc also (8) ggizheb pc in the morning gii- prev past tense (1, 2, 3, 4,

5, 9, 10, 11, 12, 13, 15)

giigdo vai speak (12) niimbaagan ni water pail giiwednong pc in the north nokii vai work (1) nsing pc three times (4) gnabaj pc perhaps (11) ow prn this (inan.) (13) go pc indeed (8, 8, 9) pii pc when (2) piitaagnagaa vii be snow gsinaamgad vii be cold of a certain depth (4) shpaagnagaa vii be high gwaabhan vti dip s.t. (9) snow (3) waabndan vti see s.t. (13, 14, 15) iw prn that (inan.) (7) wava prn someone (11) wesiinh na animal (11) kiwenziinh na old man (12, wii prn he, she, him, her, it koozde vai be that number wiinaagmi vii be dirty water (7) wiindmaw vta tell s.o. (11) maajiidoon vti take s.t. wnjijwan vii flow from there (8) maanoo pc nevertheless (9) vaa vii be there (6) menookmi= ch. form of yaamgad vii be (6) zhi vta say to s.o. (13) zhinaagwad vii look so (13) mnookmi vii be spring (2) ziishaakdoke vai make naadi vti fetch s.t. (5) sugar (2) Ziisbaakdoke-giizis na nbiish ni water (5, 7, 13) month of March (2) ndahan vti draw s.t. from there [of water] (6, 7) ndahbaan ni water hole

#### X. Spring Thunderstorm

(monolingual, p. 45, analysis, p. 226)

- (1) Ngoding ngii-nokiinaaba giiwednong gbe-bboon. (2) Pii dash menookmig, Ziis= baakdoke-giizis egoojing, gii-gsinaamgad. (3) Gii-shpaagnagaa. (4) Nsing ekoozdeng giipiitaagnagaa, (5) Ggizheb dash ngii-naadin nbiish, (6) Maa dash endhamaang dkibi aabtawdaaki yaamgad, besho yaag nbis. (7) endhamaang. (8) Gye go dbi wnjijwang ge wii go bkwebiigmi. (9) Maanoo dash go naa bngii aabtooshkin niimbaagning ngiigwaabhaan. (10) Ngii-maajiidoon endaa= yaang.
- (11) Ngii-wiindmawaag, Gnabai waya wesiinh vaadig maa ndahbaaning.
- (12) Aw dash kiwenziinh gii-giigdo, Aanii dash?
- (13) Mii dash gaa-nag, Waabndamog ow nbiish ezhnaagwak.
- (14) Aa nii nga-waabndaan, kido dash aw kiwenziinh.
  - (15) Wgii-waabndaan dash.

(1) Once I was working in the North all winter. (2) Then when the spring was at hand, in the month of March, there was cold weather. (3) There was deep snow. (4) The snow was three feet deep. (5) In the morning I fetched water. (6) The spring from which we got the water was halfway up a hill, near Eni-dgoshnaan wiinaagmi iw nbiish a lake. (7) When I got there the water in our spring was dirty. (8) Also, the place from which it flowed had muddied water. (9) Nevertheless I dipped up a little, half a filling, in the pail. (10) I took it to our house.

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- (11) I said to them, "It seems as if there may be some creature in the spring from which we get water."
- (12) Then the old man spoke: "How is that?"
- (13) I said to him, "Look at the way this water looks."
- (14) "Well let me take a look at it," said the old man.
  - (15) Then he looked at it.

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## mchigeeng.ca/videos.html

www.mchigeeng.ca/videos.html

## The "Well" Recorded Elder Archival Interviews Ojibwe Docs Archival English Docs Local Cultural Resources



# Using the Annotations

## **Searching Annotations**

Annotated stories at <a href="http://altlab.ualberta.ca/korp/">http://altlab.ualberta.ca/korp/</a>

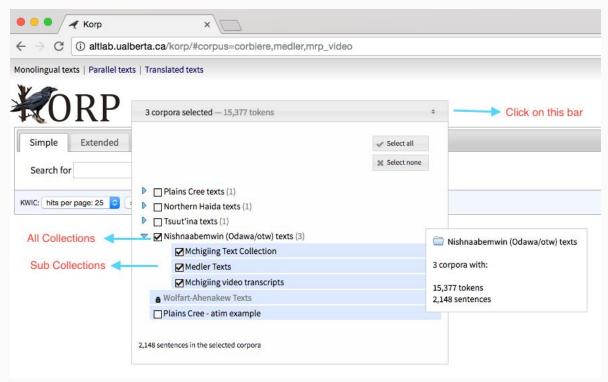
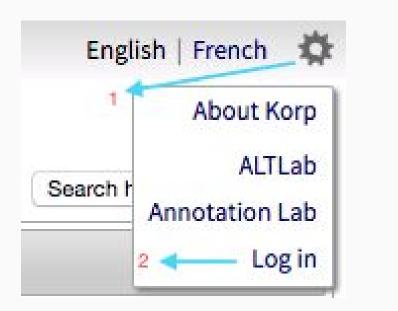


Table of contents at: <a href="http://altlab.ualberta.ca/korp/otw\_toc.html">http://altlab.ualberta.ca/korp/otw\_toc.html</a>

#### **Access Medler**

- Medler texts are password protected
  - Username: gawiin
  - o Password: ehenh







## Search Modes

- 3 modes:
  - Simple: "show me this exact word"
  - Extended: "show me words of this type in these stories"
  - Advanced: most flexible, use at own peril

Monolingual texts | Parallel texts | Translated texts



3 corpora se lected - 15,377 tokens



Simple Extended Advanced

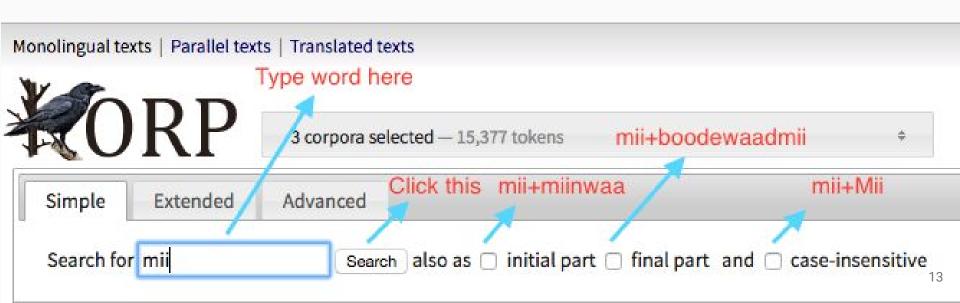
Search for

Search also as initial part final part and case-insensitive

KWIC: hits per page: 25 Statistics: compile based on: word sort within corpora: not sorted

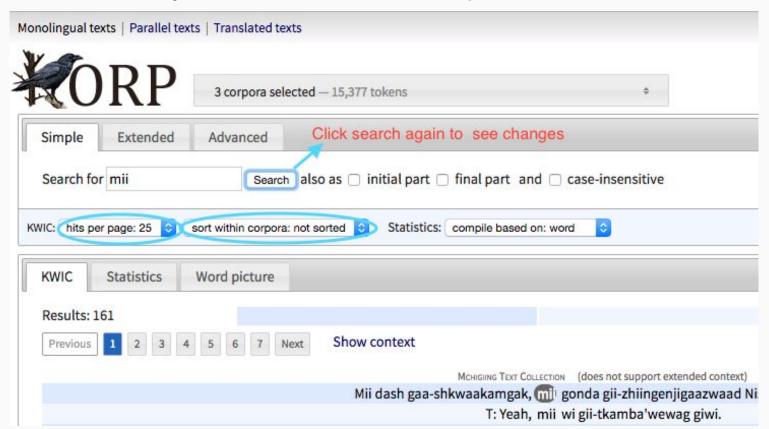
## Simple Search How-to

- Simple search is the default mode (tab under crow)
- Type a word and click "Search"
  - o E.g: mii
  - <Enter> key does not trigger search
- Expand search by using tick boxes



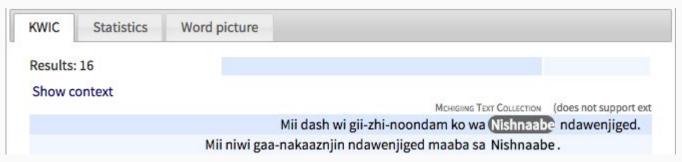
### Search results options

Customize your search results with drop-down menus:



#### The actual results

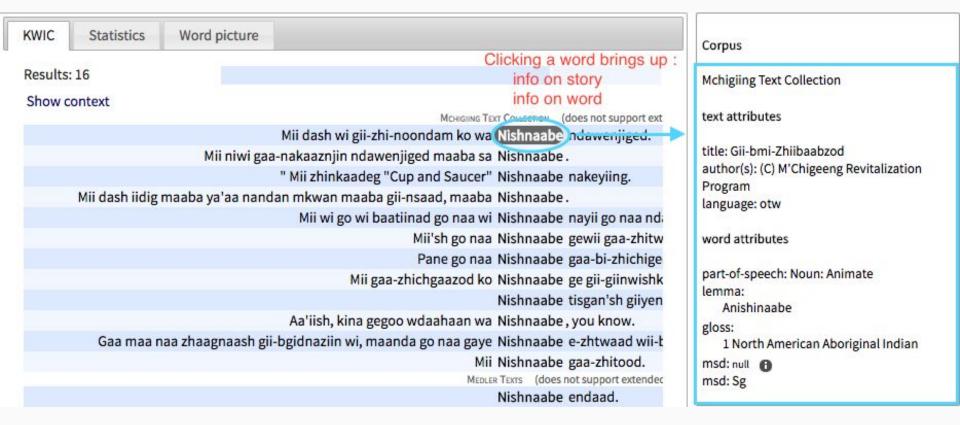
Results appear bolded in a central column by default



Click "Show Context" to see each result in a whole sentence

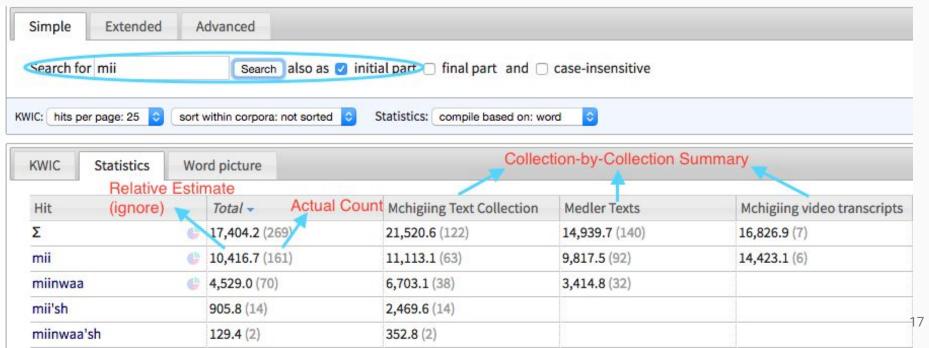


## View word data by clicking (site url: <a href="www.atlab.ualberta.ca/korp">www.atlab.ualberta.ca/korp</a>)



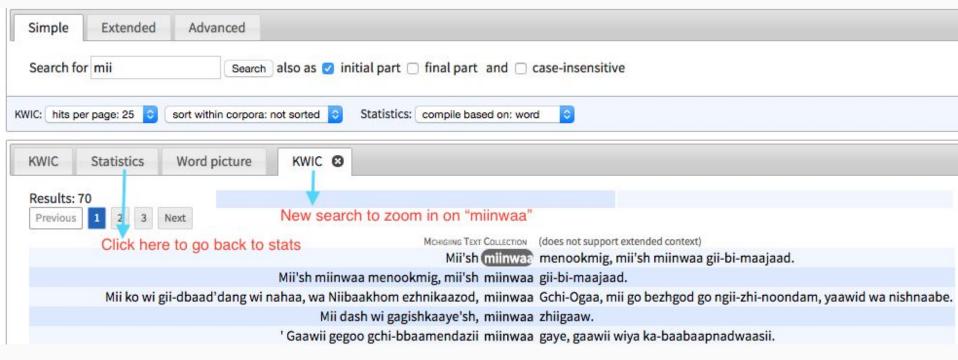
### Counting results

- Statistics tab counts the results
- Each word is given with two numbers
  - Absolute frequency (in parentheses): how often it actually occurred in results
  - Relative frequency: how often it would occur in a large story only using search results



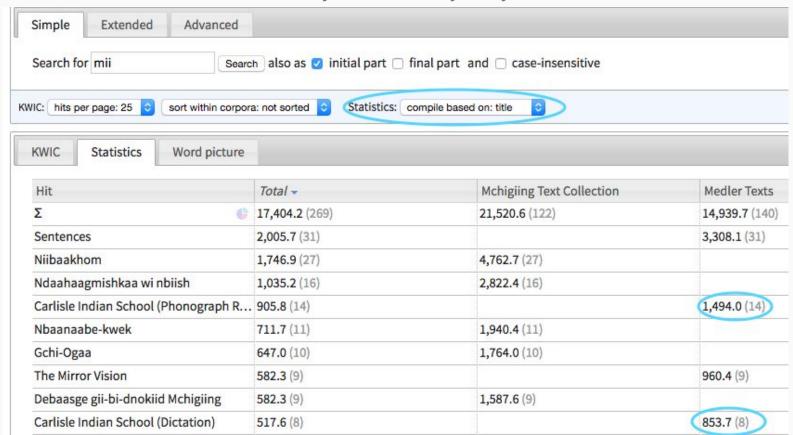
#### Zoom in on a word

Clicking on a word in Statistics tab zooms in on that word



### Customize Counts (last menu on right)

Counts can be tabulated by which story they are located in



## The most frequent word

- Finding the most frequent word requires a fancier search
- Click on the "Extended" tab



- Click on "Search", (make sure statistics are "Compiled based on word")
- Switch to "Statistics" tab

| KWIC: hits per page: 25 🗘 sort within corpora: not sorted 🗘 statistics: compile based on: word 🗘 |              |                      |                           |                     |                             |
|--|--------------|----------------------|---------------------------|---------------------|-----------------------------|
| KWIC Statistics  | Word picture |                      |                           |                     |                             |
| Hit  |              | Total -              | Mchigiing Text Collection | Medler Texts        | Mchigiing video transcripts |
| Σ  | •            | 1,000,000.0 (15,456) | 1,000,000.0 (5,669)       | 1,000,000.0 (9,371) | 1,000,000.0 (416)           |
|  | 0            | 132,958.1 (2,055)    | 96,666.1 (548)            | 156,013.2 (1,462)   | 108,173.1 (45)              |
| 5  | 0            | 55,577.1 (859)       | 88,551.8 (502)            | 34,468.0 (323)      | 81,730.8 (34)               |
| go   | 0            | 31,767.6 (491)       | 41,100.7 (233)            | 24,863.9 (233)      | 60,096.2 (25)               |
| dash   | 0            | 30,279.5 (468)       | 9,349.1 (53)              | 44,072.1 (413)      | 4,807.7 (2)                 |
| Mii  | 0            | 21,868.5 (338)       | 25,754.1 (146)            | 19,421.6 (182)      | 24,038.5 (10)               |
| sa   | 6            | 11,451.9 (177)       | 11,818.7 (67)             | 11,631.6 (109)      | 2,403.8 (1)                 |
| iw   |              | 11,387.2 (176)       |                           | 18,781.3 (176)      |                             |
| wi   | •            | 10,610.8 (164)       | 25,401.3 (144)            |                     | 48,076.9 (20)               |
| mii  | •            | 10,416.7 (161)       | 11,113.1 (63)             | 9,817.5 (92)        | 14,423.1 (6)                |

## A fairer test for most frequent word

- Last test assumed mii and Mii are different words!
- Avoid by selecting "Compile based on lemma" (the dictionary form)
- Click on "Search", switch to "Statistics" tab

| aw    | 8,605.1 (133)            | 1,234.8 (7)    | 13,339.0 (125) | 2,403.8 (1)   |
|-------|--------------------------|----------------|----------------|---------------|
| maaba | 9,769.7 (151)            | 13,935.4 (79)  | 7,683.3 (72)   |               |
| wi    | 10,740.2 (166)           | 25,754.1 (146) |                | 48,076.9 (20) |
| iw    | 11,581.3 (179)           |                | 19,101.5 (179) |               |
| ge    | <b>()</b> 13,781.1 (213) | 705.6 (4)      | 22,302.8 (209) |               |
| mii   | <b>②</b> 27,820.9 (430)  | 25,754.1 (146) | 29,239.1 (274) | 24,038.5 (10) |
| dash  | <b>③</b> 30,279.5 (468)  | 9,349.1 (53)   | 44,072.1 (413) | 4,807.7 (2)   |
| go    | <b>34,420.3</b> (532)    | 41,629.9 (236) | 28,919.0 (271) | 60,096.2 (25) |

## More on lemma frequency

• Counting by word also treats *Nishnaabeg* and *Nishnaabe* as different

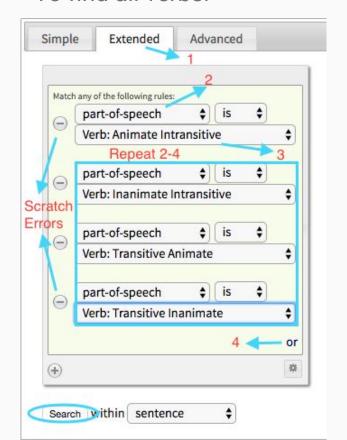
| Nishnaabe  | <b>(b)</b> 1,035.2 (16) | 2,116.8 (12)              | 426.8 (4)    |
|------------|-------------------------|---------------------------|--------------|
| Hit        | Total →                 | Mchigiing Text Collection | Medler Texts |
| Nishnaabeg | <b>(</b> 2,393.9 (37)   | 2,469.6 (14)              | 2,454.4 (23) |
| Hit        | Total →                 | Mchigiing Text Collection | Medler Texts |

Counting by lemma lumps them (and others) together

| Hit         | Total -             | Mchigiing Text Collection | Medler Texts |
|-------------|---------------------|---------------------------|--------------|
| Anishinaabe | <b>4,529.0</b> (70) | 6,350.3 (36)              | 3,628.2 (34) |

## Finding all verbs

#### To find all verbs:

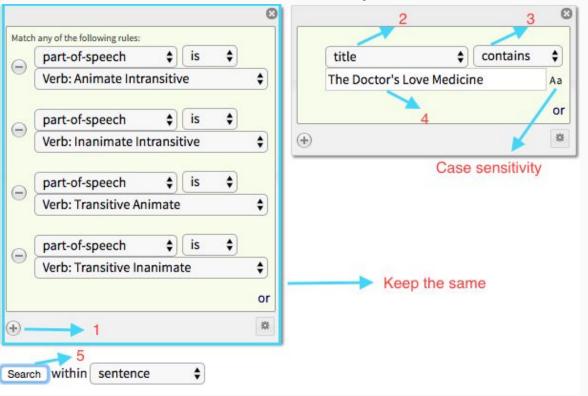




| Hit       |            | Total -           |
|-----------|------------|-------------------|
| Σ         | 0          | 173,201.3 (2,677) |
| kida      | <b>6</b> h | 5,823.0 (90)      |
| waabmaa   | <b>6</b> h | 4,334.9 (67)      |
| yaa       | dh.        | 3,817.3 (59)      |
| zhaa      | 4          | 3,752.6 (58)      |
| daa       | 0          | 2,652.7 (41)      |
| nsaa      | 0          | 2,005.7 (31)      |
| nakii     | •          | 1,941.0 (30)      |
| waabndaan | 0          | 1,811.6 (28)      |
| bi-zhaa   | dh.        | 1,746.9 (27)      |
| ggwejmaa  | 6          | 1,746.9 (27)      |

## Finding all verbs in a story

To find all verbs in a story:



| Hit                | Total -             |
|--------------------|---------------------|
| Σ 🔮                | <b>5,111.3</b> (79) |
| bgamse .           | 129.4 (2)           |
| njigaabwi ndaanmat | 129.4 (2)           |
| gkinoo'mawaa .     | 64.7 (1)            |
| njigaabwi aw       | 64.7 (1)            |
| nakii .            | 64.7 (1)            |
| biijnesdoon iw     | 64.7 (1)            |
| gkendaan wiikweb   | 64.7 (1)            |
| n'kweshkwaa njiga  | 64.7 (1)            |
| gkinoo'maagzi ney  | <b>64.7</b> (1) 25  |

## Extended search summary

- Any other searches follow the same logic
- Pick what you want to search for (e.g: nouns)
  - Widen search with "or"
  - Narrow search with "and" ("+" button)
- Click "Search"

#### Extra Search Criteria

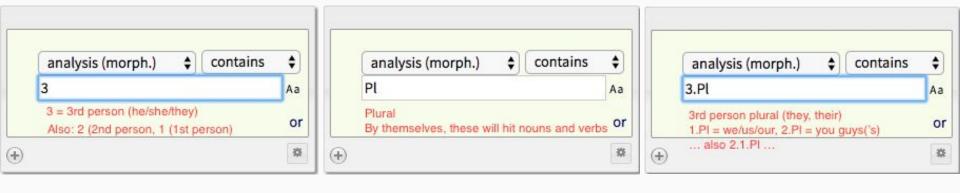
Searches may also query:

```
word
  word
word attributes
  lemma
  part-of-speech
  analysis (morph.)
  analysis (abstr.)
  gloss
text attributes
  title
  language
  author(s)
  url
```

- For English "glosses": only single words ... good: "school", bad: "at school"
  - Translations can be found at <a href="http://dictionary.nishnaabemwin.atlas-ling.ca/">http://dictionary.nishnaabemwin.atlas-ling.ca/</a>
- Sorry, "lemma" option does not work

## **Analysis explanation**

- Grammatical information queried with "analysis (morph.)", "analysis (abstr.)"
  - Abstract analysis is easier to read, more verbose
  - Morph analysis is more reliable, but sparser and closer to structure of Nishnaabemwin
- Suggested search items:



 Full list of possible search items at: http://altlab.ualberta.ca/korp/markup/msdtags.html

## Analysis examples

- Analyses for gii-naadmawaawaad 'they helped him/them'
  - o morph: PVgii.\_.Cnj.ThmDir.3.Pl
    - PVgii: past tense (*gii*-)
    - Cnj: conjunct order (questions, relative clauses)
    - ThmDir: 'direct theme sign' (-aa)
      - Used for he/she/they \_ him/her/them
    - 3.Pl: they/them (-waad)
  - abstract: PV.gii.\_.Cnj.Pos.Neu.3Pl.40
    - PV.gii: past tense
    - Cnj: conjunct order
    - Pos: positive (i.e. <u>not gii-naadmawaasgwaa</u> 'they didn't help him/them')
    - Neu: neutral (i.e. <u>not</u> gii-naadmawaawaapa 'they had helped him/them')
    - 3.Pl: third person plural subject (they)
    - 40: obviated third person object (him/them)

#### Some caveats

- Annotations are a work in progress
- When multiple annotations were possible, just picked shortest
  - o E.g.: miinwaa could be miin-waa 'their berry' or miinwaa 'and'
- Other words are missing annotations entirely
  - Spelling errors: wesiinhig vs wesiinyag/wesiinyig
  - Dialect variation: mkwan (expected mkon 'bear-obviative')
  - Missing structure: temgad (-magad verbs often missing)
- When using analyses, always good to double check with a speaker
- If you want to get involved, there is a sign-up sheet

# Building a Lesson

-open discussion-

## **Next Steps and Conclusion**

- Flexible, free resource to put stories under microscope
- Looking forward to your feedback on how to improve
- Anticipated future developments
  - More stories
  - Spell checkers
  - Automatic online glossary generation
  - Sentence level analysis
- Sign up to get slides and information about future developments
- Thank you

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## Search for first person plural inclusive

