

Archiving Cherokee texts and developing Augmented Reality/Virtual Reality tools for language teaching.

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Roadmap

- Background on Cherokee language
- Brief history of Cherokee people, removal
- Current state of affairs for language and needs for support
- Archiving work
- Digital projects, engagement in daily life
- Future work

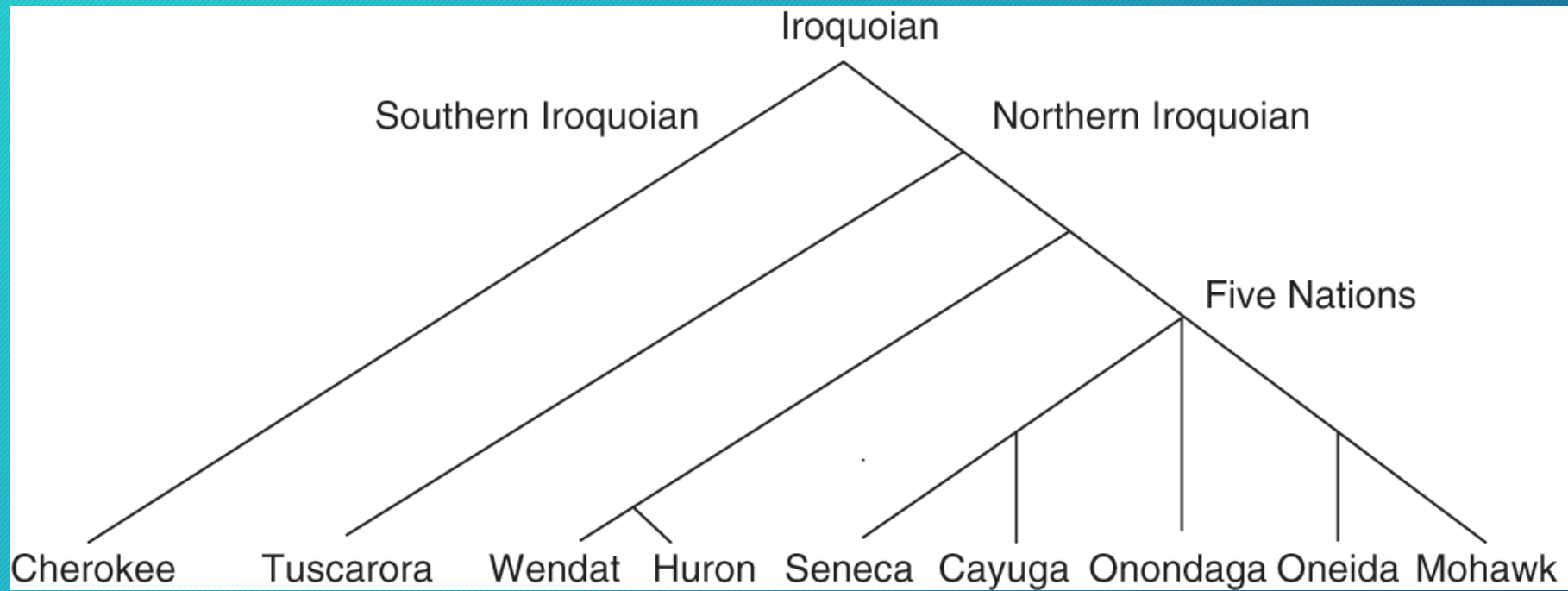


Background

- 3 Nations
- Iroquoian language
- Polysynthetic
 - “Wi-da-tsi-ne-gi-si”
- Classificatory system
 - Solid
 - Liquid
 - Long & rigid
 - Flexible
 - Animate



Iroquoian Languages



Iroquoian & Cherokee traditional land bases

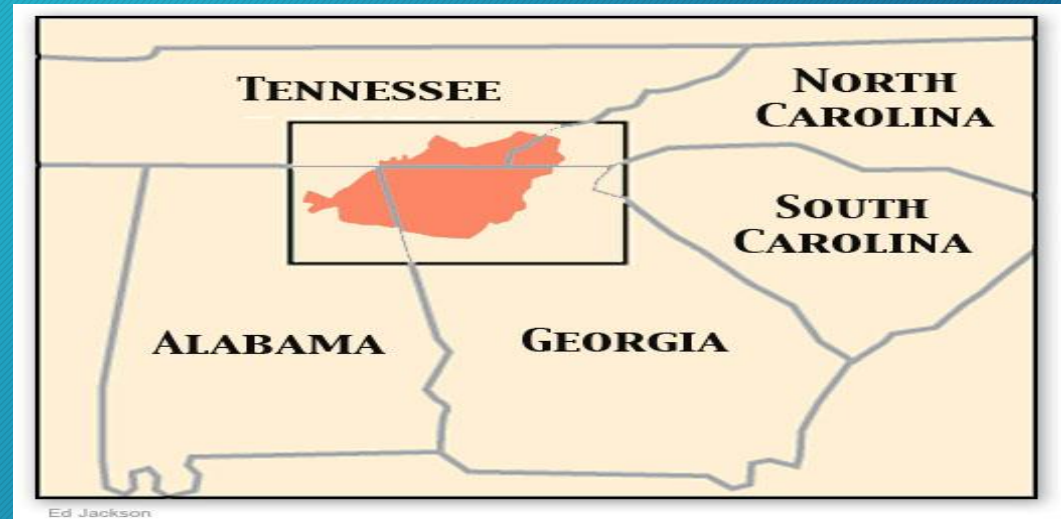


Cherokee territory

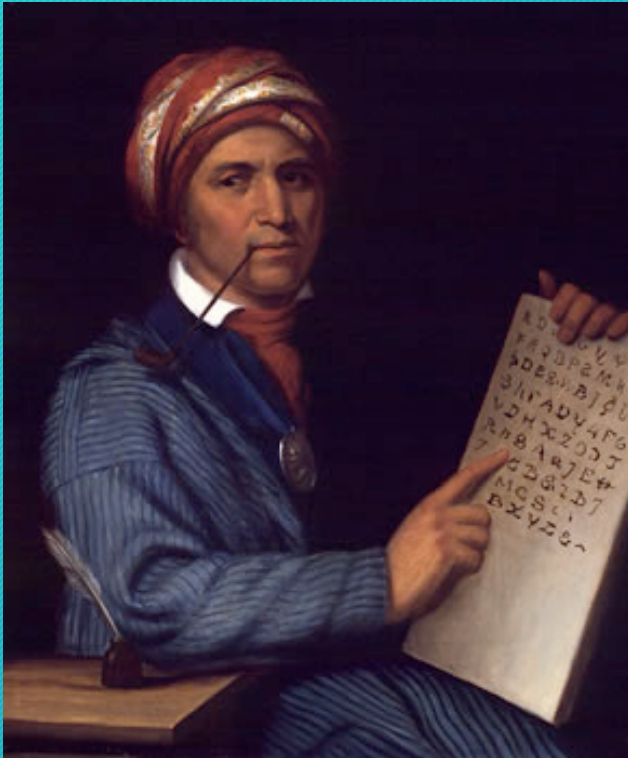
Pre-Revolution



Post-Revolution



1A&9P: Writing and Literacy



- Sequoyah - ca. 1821
- Single-handed invention
- Illiterate, Monolingual
- Syllabary, ≠ “alphabet”

From Hand to Print



D _a	R _e	T _i	ḍ _o	Ṡ _u	i _v
S _{ga} Ṡ _{ka}	F _{ge}	Y _{gi}	A _{go}	J _{gu}	E _{gv}
F _{ha}	P _{he}	ḍ _{hi}	F _{ho}	Ḥ _{hu}	Ḥ _{hv}
W _{la}	Ṡ _{le}	P _{li}	G _{lo}	M _{lu}	Ḥ _{lv}
Ṡ _{ma}	Ḥ _{me}	H _{mi}	Ḍ _{mo}	Y _{mu}	
Ṡ _{na} Ṡ _{hna} G _{nah}	Ḥ _{ne}	h _{ni}	Z _{no}	Ḥ _{nu}	Ḡ _{nv}
E _{qua}	Ḡ _{que}	P _{qui}	V _{quo}	Ḡ _{quu}	E _{quv}
H _{sa} Ḡ _s	A _{se}	B _{si}	F _{so}	Ṡ _{su}	R _{sv}
L _{da} W _{ta}	S _{de} T _{te}	J _{di} J _{ti}	V _{do}	S _{du}	Ṡ _{dv}
ḍ _{dla} L _{tla}	L _{tle}	C _{tli}	F _{tlo}	Ḡ _{tlu}	P _{tlv}
G _{tsa}	V _{tse}	h _{tsi}	K _{tso}	J _{tsu}	C _{tsv}
G _{wa}	Ḡ _{we}	Ḡ _{wi}	Ḡ _{wo}	Ḍ _{wu}	G _{wv}
Ḡ _{ya}	B _{ye}	Ḍ _{yi}	h _{yo}	G _{yu}	B _{yv}

First newspaper in an American Indian language

G W Y

JcAUC~A.

CHEROKEE
PHOENIX.
17

VOL. I.
NEW ECHOTA, WEDNESDAY AUGUST 6, 1828.
NO. 23.

<p>EDITED BY ELIJAH BOUDINOTT. PRINTED WEEKLY BY ISAACH HARRIS, FOR THE CHEROKEE NATION. At \$2 50 if paid in advance, \$3 in six months, or \$5 50 if paid at the end of the year. To subscribers who can read only the Cherokee language the price will be \$2,00 in advance, or \$2,50 if paid within one year. Every subscription will be considered as continued unless subscribers give notice to the contrary before the commencement of a</p>	<p>tinuous for a year, and takes place up- on the death of parents. The chil- dren do not put on black, but are obliged to wear, during the whole year, the clothes which they had on at the death of their father, without being allowed to change them, let them be ever so tattered. They fast on the anniversary of his death, every year. Second mourning lasts a month, and takes place on the demise of chil- dren, uncles, aunts. During that pe- riod they dare neither wash them-</p>	<p>doubt, sir, that you have yours."— "Yes, sir, I am a man catcher."—"A man catcher, (said the gentleman, are you? I am glad to hear you say so, for you are the very person I want. I am a justice of the peace in this district, and am commissioned to seize the person of Dick Baxter, who is expected to preach at a conventicle in this neighborhood early to-morrow morning; you shall go with me, and I doubt not we shall easily apprehend the rogue." Mr. B. agreed to ac-</p>	<p>ly the whole of Europe experienced, in some degree, the earth's commo- tion. The cities we have alluded to above, were those where the shock was the severest. Liege being under- mined in its whole extent by coal pits, its inhabitants were greatly and justly terrified. At Maestrecht, a catholic priest was in the act of performing the burial service in the public ceme- tery, placed, as it would seem, on the very line the earthquake most forcibly evinced itself. Alarmed at the unac-</p>	<p>served. A wooden house having been lifted from its foundation, was afloat and washed into the Admiralty yard, and on searching this, it was found to contain much property. On the wa- ter subsiding, the dead body of a fe- male was found kneeling, in the act of supplicating to the image of a saint af- fixed to the wall. Throughout the city all was terror, despair and dis- may; for the terrified inhabitants im- agined a general deluge was about to take place."</p>
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Trail of Tears



- 1838 - forced removal of Cherokees in Georgia, Alabama, Tennessee, parts of NC.
- Eastern Band of Cherokee Indians in NC are descendants of those who remained and those who returned.

Eastern Cherokee Territory Today



Current State of Affairs

- 2 extant dialects
- Some 2,000 speakers remain TOTAL, according to 2019 estimates
- Majority of speaker population elderly, little/no intergenerational transfer
- Speaker replenishment is priority

Published On: Thu, Jun 27th, 2019

Front Page / News | By Scott

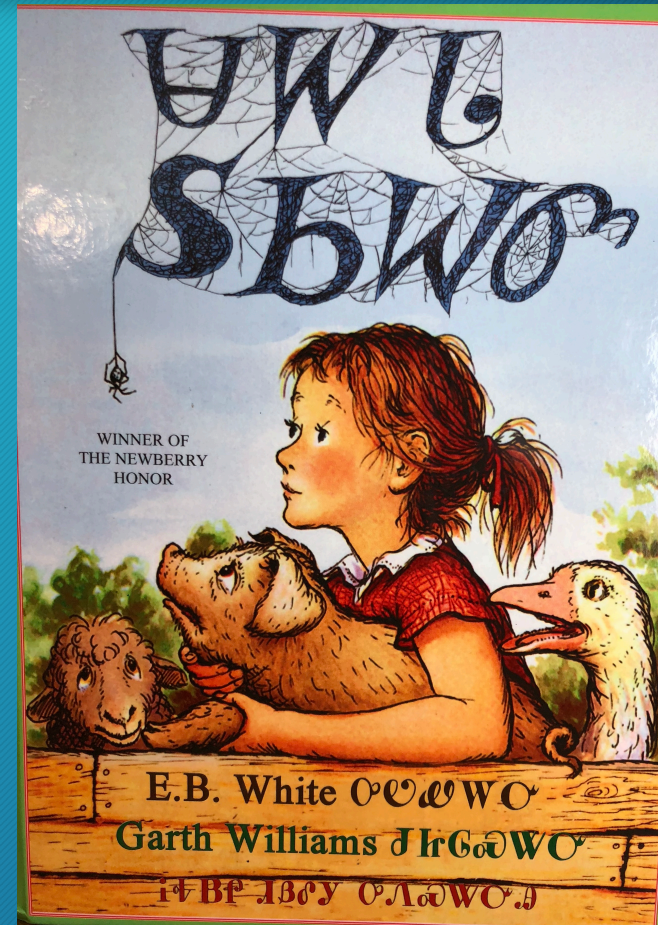
Tri-Council declares State of Emergency for Cherokee language



The leaders of the three federally recognized Cherokee tribes – Eastern Band of Cherokee Indians, Cherokee Nation (Okla.), and the United Keetoowah Band of Cherokee Indians (Okla.) – met in a Tri-Council meeting at Kituwah on the morning of Thursday, June 27. (SCOTT MCKIE B.P./One Feather photos)

Needs for support

- Immersion schools need support from L2 learners, while L2 learners need their own support
 - (Faster) materials creation
 - Engaging the language in day-to-day life
- Two needs for support, two projects:
 - Archiving Cherokee texts
 - (Computer-mitigated) social integration



Potentials of technological applications

- Faster materials creation
- Easier transcription
 - (we'd kill for an accurate speech-to-text system)
- More engaging learner materials
- Mobile apps to increase the language's presence in day-to-day life



Archiving

- Digitize/scan/OCR texts & translations
- Align sentences, export to .txt
- Import to AntPConc, AntConc
- Query results

The screenshot shows the AntPConc application window. At the top, the search term is 'with'. The search corpus is set to 'English'. The context size is 20 words. The target is 'English' and there are 1568 hits. The search results are displayed in a table with two sections: 'KWIC' and 'Reference'.

Line	KWIC
1	Charlotte read the words: "With New Radiant Action."
2	With a final heave they jammed him into the crate.
3	And the chief captain answered, With a great sum obtained I this citizenship. And Paul
4	saith, I will provoke you to jealousy with that which is no nation, With a nation void of understanding will I anger you.
5	And Agrippa said unto Paul, With but little persuasion thou wouldest fain make m
6	And he said unto them, With desire I have desired to eat this passover with y
7	With her broad bill the goose pushed the unhatched

Line	Reference
1	SAPBR T.I.S.960.I UWL, "DY.A O'WMY9DY T960.L.A."
2	b fV" TCGE.I 9hUVB 9hB9W.LT Q.LBT.
3	9E9GRZ .LLhV.A 9D 9.9RY; O'V.A DLJB9 9D 99DY DLUVFS9 FRT. V"WZ 9D 9.9RY; DB99h DLUVFS9 DISO-Y.
4	D4Z DB hfr99, L9DA 99h9W9 T99? T99 FR 5b 9D h9999, TG9GF.L9 O-UCB.LF L9hBWh 99DY 9 D99 O'ZP9. hFR9 FRT, D9 99U9-99 B9 9hB.L999 LC999Wh.
5	t-VZ RY99 9D 9.9949Y V"W; D9V" h99Y4AYD 9G.L99 h9TG999DY T99L99V.L9.
6	9DZ h9.9949T, O'G.L DIS999DY 9D 9Z.A99Y T9W9 T999999.L9 D9V" 99Y99999.
7	D9999 99999T E.L 9G9999T O'999 O'.99999 V9, h9L O'99.L9999 O'999999T O'9999999.
8	D9 O'K9 JL99-99 9999.L9999 9999V.L9 D9.

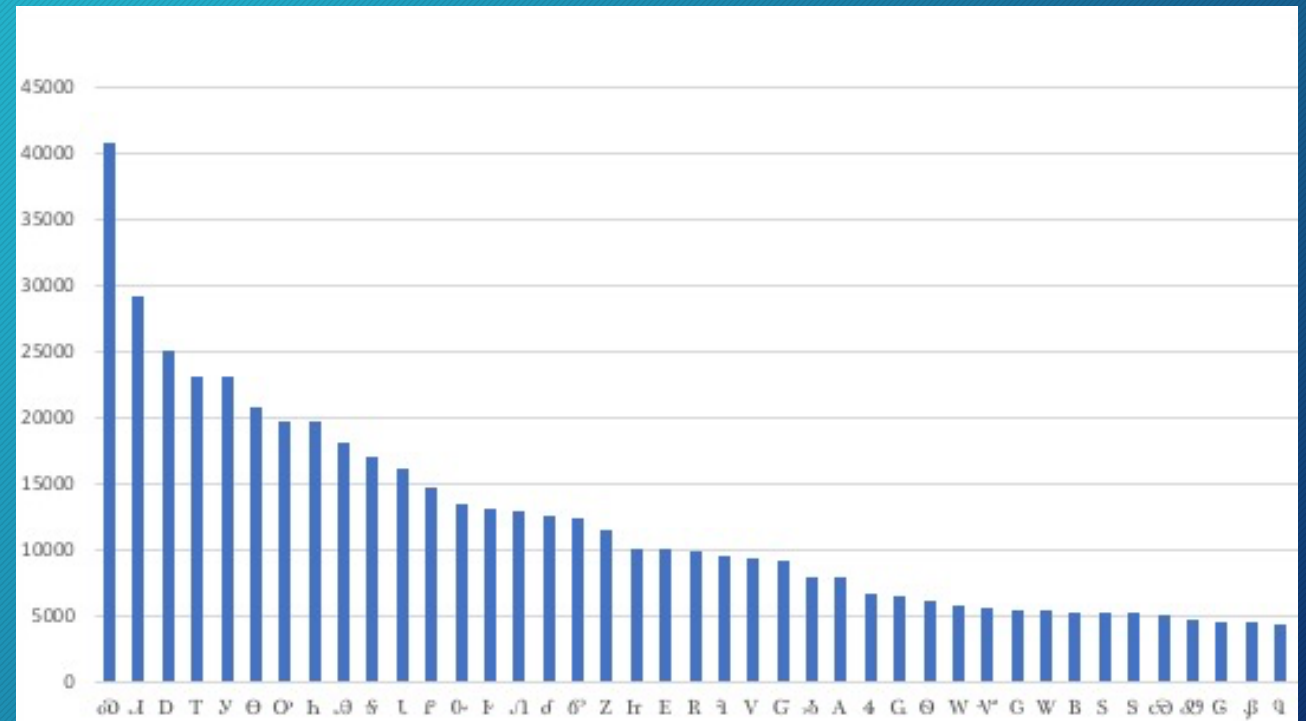
Text Analysis

Most frequently occurring words

#Word Types: 5727
 #Word Tokens: 18806
 #Search Hits: 0

1	710	Zḍ
3	420	OḞጵ
4	275	Fḍጵ
6	210	ḍḍጵ
10	126	ጵY
13	106	D4Z
14	99	AFḍጵ
18	89	h\$ጵ
19	86	T\$
22	81	TGḍጵ
23	81	Zጵ
25	72	OḞጵጵ
26	68	TG
27	67	F4
28	66	FR
29	66	ጵhḍጵጵAVጵ
30	62	ḍYጵጵ
33	59	ḍVጵ
34	57	ጵP
35	56	ጵVጵ
36	55	F4T
37	53	F4ḍጵ
38	52	RWጵ
39	51	Yጵ
40	50	RLጵጵጵ

Most frequently occurring syllabary characters



Lexicography

- Corpus-based approach is effective
- Ready-made reference sentences
- Fairly straightforward glossing

Cherokee-English Dictionary Online Database

ᏍᎩ ᎠᎵᎠᎵ ᎠᎵᎠᎵ ᎠᎵᎠᎵ? - What date is it today?
ᎠᎵᎠ ᎠᎵᎠᎵ ᎠᎵᎠᎵ ᎠᎵᎠᎵ ᎠᎵᎠᎵ ᎠᎵᎠᎵ ᎠᎵᎠᎵ ᎠᎵᎠᎵ
Today is **Monday 1 July 2019**

Basic Search:

<input type="text"/>	Cherokee (phonetic) Instructions
<input type="text"/>	GWV ᎠᎵᎠᎵ Instructions
<input type="text"/>	English Instructions
<input type="text" value="-Select a Category-"/>	Category

[Advanced Search](#)

Search Options:

- Search For Exact Match
- Include Cherokee English Dictionary
- Include sentences in searches
- Include Consortium Word List
- Include Cherokee Nation Medical Terms
- Include North Carolina Medical Terms
- Include Microsoft Computer Terms
- Include Noquisis Word List
- Include Raven Rock Dictionary

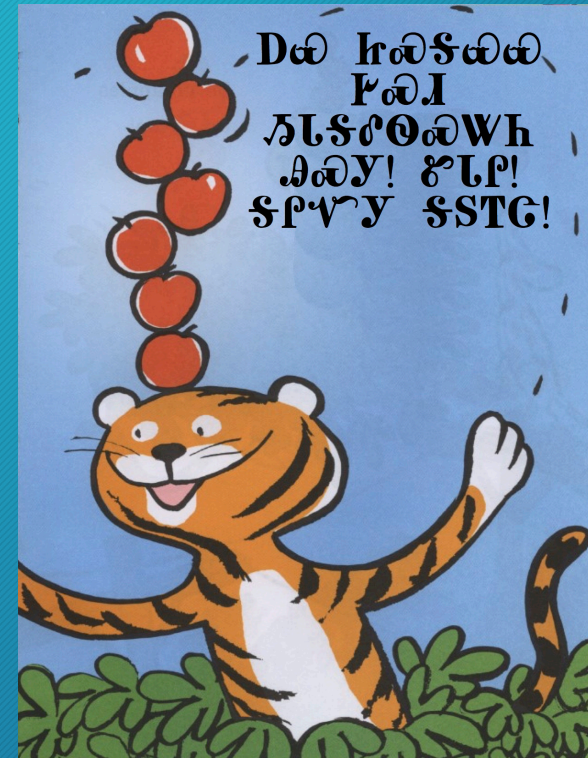
Integration

- Archiving yields data - how do you get people to *use* it?
 - Pedagogy
 - Immersion
 - Second language learners
 - Day-to-day applications
 - Conversational domains
 - Technology



Immersion school pedagogy

- L2 learners can help L1 speakers produce new texts more quickly.
- Translation exercises provide practice opportunities + feedback from speakers
- Speaker-approved texts can be archived and improve database



L2 pedagogy

- Archives can generate sentences for practice activities
 - Cloze-gap
 - mad-libs
 - Multiple choice...
- Practice for L2 learners → more proficient speakers, more help for L1 speakers and immersion schools

GWY TJLW hwb-olj

[Beginner](#) [Intermediate](#) [Advanced](#)

[One Time in Chapel Hill](#) [Very Windy Day](#) [Gardening](#) [Charlotte's Web](#) [The Apple Tree](#) [Sequoyah](#) [Chunestudy Feels at Home](#) [A Walk in the Woods](#)
[2017 Cherokee Phoenix](#) [The Beast](#) [Horse Story](#) [New Testament](#) [Buddy the Bluebird](#) [Littlefish](#) [Wolf Wears Shoes](#)

VSJGOL [] *olw tYGLw tHrAPbDET, mY tYGLwT," DJDET Cosby.*
We play as close to what we have discovered, as we could find that's out there," Cosby said.

[Next](#)

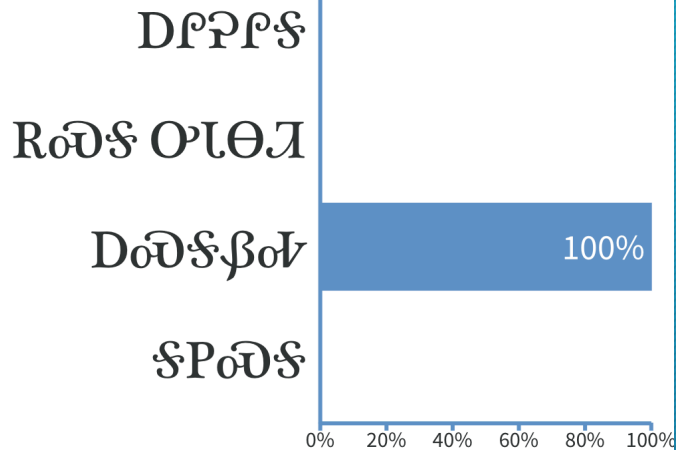
Pedagogy

Poll Everywhere

ፕዕ ማለገ ለፈ ወገኛው?

📱 When poll is active, respond at PollEv.com/benjaminfrey746

📱 Text **BENJAMINFREY746** to **22333** once to join



Google Forms

Multiple Choice

Ahyoka wants to ask for help in class. Which of the following would be the most appropriate for her to say? Choose the best answer.

✓ She's stuck on a particular problem and can't figure it out. * 1/1

- sgisdela ✓
- galisgewi
- daquado'a
- denadagohvyu

✓ She doesn't understand what is being said. * 1/1



- usganoli hniwi
- gesdi yigoliga ✓
- sunale
- detsado'a

Software Localization



Word Munchers

ഓഗസ്റ്റ് 1

Adjectives and Adverbs

ഓഗസ്റ്റ്	ഓഗസ്റ്റ്	ATe		DmThAV.J	DmThAV.J
Aമൾ	Aമൾ	EGCO			
Aമൾ	ഓഗസ്റ്റ്	DLBW.മൾ			
ഓഗസ്റ്റ്	DmThAV.J				
DmThAV.J	ഓഗസ്റ്റ്				

Sh0: 65




 

നോട്ട്: \$CL. JmThAV.J. മൾ: space bar

Heriswap

Heriswap

ഓഗസ്റ്റ് 1

 SCZAR4P &S TWമൾ: OLMW
 DBVWmT DSzB DmThAV.J JMC 
 DmThAV.J.  മൾ
 GmThAV.J mSp. WP TGGAJ SO:IA
 SFA HSO:S.

hST മൾ SൗThR mS, Rm DST
 TmThAV.J HmThAV.J. mൾ HmThAV.J
 TAAJ mThAV.J, mൾ LYmThAV.J
 GmThAV.J. SAmThAV.J OqHmThAV.J hST
 mThAV.J mൾ, mൾ mൾ.

-mൾ HmThAV.J mൾ-

Social Integration

Augmented Reality



Mobile app for conversations

Time Stamp	Phrase
0:04-0:07	¡Hola! ¿Como estás?
0:07-0:11	¡Hola! Muy bien. Quería un cafe.
0:11-0:12	¿Qué café querías?
0:13-0:14	Un cortado.
0:14-0:16	Un cortado. Bueno.
0:20-0:21	¿Cuánto es?
0:22-0:23	Cinco con cincuenta.
0:23-0:24	Muchas gracias.
0:24-0:25	Muchisimas de nada.
0:25-0:26	¡Adiós!
0:26-0:27	Ciao.

Here we see someone ordering a coffee. View the video again as necessary to gather the vocabulary needed to order.

When you're ready, take a look at the glossary for your own ordering needs, and rate your partner on their Spanish after ordering!

[GLOSSARY](#) [HOMEPAGE](#)

Potential future projects

- VR practice sessions for conversations
- VR-mitigated interaction online between speakers and learners
- Tours of Cherokee cultural sites
- More expansive illustration of traditional stories, beliefs

Mondly VR (English)





ᏍᏍᏉ! Thanks! Questions?