

Îethkaiha Yawabi: Counting in Stoney Picture Book Lesson
Created by Peter Le, 2020 Werklund Graduate

Peter Le is a K-12 Mathematics teacher passionate about contextualized, relevant, and meaningful learning experiences for all students through multiple forms of teaching. He has worked across various fields and disciplines including Sciences, Technology, and ELL, with diverse demographics. Recently, Peter has worked through a Two-Eyed Seeing approach with Indigenous communities, mentors, and elders, in coordinating and planning events, workshops, and STEAM activities in robotics over the summer.

Resource: Picture Book	Îethkaihâ Yawabi (Counting in Stoney) By: Îyarhe Wiyapta (Shining Mountains), Natasha Wesley Illustrated by Tanisha Wesley Translation by Natasha Wesley in the Îethka language of the Stoney Nakoda People
Picture Book Description	This simple yet precious Îethkaihâ book of numbers provides a beautiful narrative of counting. Author Natasha Wesley and her artist sister, Tanisha Wesley, portray the numbers 1 to 20 through their way of life, depicting traditions, concepts and symbols that are the expression of their identity.
Author/creator and/or literature background	Author: Îyarhe Wiyapta is a seventh-generation descendant of the Holy Medicine Man Chief Hector Crawler, and a sixth-generation descendant of George Crawler, who was a Treaty 7 signatory. She is also a fifth-generation descendant of Ta Otha (Moose Killer), Chief Peter Wesley, and Holy Medicine Man Chief William Snow. She enjoys skiing and being in nature with her family.
UPE course connections	Educ 435- This text explores a different way of expressing the meaning of a concept (i.e. the various ways to express the numbers '1-20' in a different language, different ways to describe/explain/represent the numbers - the Stoney Nakoda numbering system. For lower grades, this would tie in with encoding and decoding, and make meaning. It is a great source for examining oral language, and basic literacy/numeracy development within a culturally relevant pedagogy. Further, this resource can be used to celebrate all first languages in the classroom. Educ 450 – This text can help pre-service teachers simple ways of exposing students to different cultures and languages, and the similarities between them. Since this lesson targets younger students, it presents a great opportunity to help students appreciate and demonstrate sensitivity towards individual and cultural differences. Educ 460/535 - Integrating the Îethka language of the Stoney Nakoda People with Math is an effective way of increasing language learning (and how they are interconnected). In the PoS- this text addresses the concrete, and visual aspects) of the natural number system. Since this lesson targets a younger audience, it is a

	great example of exploring math through integration of culture and a different linguistic approach to numbers.
K-12 connection	<p>Grade 1 to Grade 2:</p> <p>Students will be introduced to the Îethka language of the Stoney Nakoda People through counting numbers 1-20. This will help them share factual information about their surroundings and be introduced to the Îethka language of the Stoney Nakoda People and culture, exploring a different approach to numbers, while reinforcing the natural numbers system.</p> <p>This lesson also connects to the Social Studies curriculum by honouring and valuing the traditions, concepts and symbols that are the expression of Indigenous identity.</p> <p>The picture book is a great book for young students. It has beautiful illustrations that portray the numbers 1 - 20 through the way of life of the Stoney Nakoda People. For older students, they can share how to write/say numbers in their own culture.</p> <p>Integrating the Îethka language of the Stoney Nakoda People into Math is an effective way of increasing language learning (and how they are interconnected). The more young students are surrounded by languages and the different ways to say/express the same thing, the more they are able to engage in language literacy and appreciate cultural diversity.</p> <p>Math Grade 1</p> <p>Develop number sense.</p> <ol style="list-style-type: none"> 1. Say the number sequence 0 to 100 by: <ul style="list-style-type: none"> • 1s forward between any two given numbers • 1s backward from 20 to 0 • 2s forward from 0 to 20 • 5s and 10s forward from 0 to 100. 2. Subitize (recognize at a glance) and name familiar arrangements of 1 to 10 objects or dots. 3. Demonstrate an understanding of counting by: <ul style="list-style-type: none"> • indicating that the last number said identifies “how many” • showing that any set has only one count • using counting-on • using parts or equal groups to count sets. 4. Represent and describe numbers to 20, concretely, pictorially and symbolically.

5. Compare sets containing up to 20 elements, using:
 - referents
 - one-to-one correspondence
 to solve problems.
 6. Estimate quantities to 20 by using referents.
 7. Demonstrate an understanding of conservation of number.
 8. Identify the number, up to 20, that is:
 - one more
 - two more
 - one less
 - two less
 than a given number.
 9. Demonstrate an understanding of addition of numbers with answers to 20 and their corresponding subtraction facts, concretely, pictorially and symbolically, by:
 - using familiar mathematical language to describe additive and subtractive actions
 - creating and solving problems in context that involve addition and subtraction
 - modelling addition and subtraction, using a variety of concrete and visual representations, and recording the process symbolically.
 10. Describe and use mental mathematics strategies for basic addition facts and related subtraction facts
- Patterns and relations**
1. Sort objects, using one attribute, and explain the sorting rule.
 2. Sort 3-D objects and 2-D shapes, using one attribute, and explain the sorting rule.
 3. Sort objects, using one attribute, and explain the sorting rule.
- Space and Shape (measurement)**
1. Ordering objects and matching
- Grade 2**
- Develop number sense.**
1. Say the number sequence 0 to 100 by:
 - 2s, 5s and 10s, forward and backward, using starting points that are multiples of 2, 5 and 10 respectively
 - 10s, using starting points from 1 to 9
 - 2s, starting from 1.

2. Demonstrate if a number (up to 100) is even or odd.
4. Represent and describe numbers to 100, concretely, pictorially and symbolically.
5. Compare and order numbers up to 100.
7. Illustrate, concretely and pictorially, the meaning of place value for numerals to 100.
8. Demonstrate and explain the effect of adding zero to, or subtracting zero from, any number.
9. Demonstrate an understanding of addition (limited to 1- and 2-digit numerals) with answers to 100 and the corresponding subtraction by:
 - using personal strategies for adding and subtracting with and without the support of manipulatives
 - creating and solving problems that involve addition and subtraction
 - using the commutative property of addition (the order in which numbers are added does not affect the sum)
 - using the associative property of addition (grouping a set of numbers in different ways does not affect the sum)
 - explaining that the order in which numbers are subtracted may affect the difference.
10. Apply mental mathematics strategies for basic addition facts and related subtraction facts

Patterns and relations

3. Sort objects, using one attribute, and explain the sorting rule.

Social Studies

K.1.3 examine what makes them unique individuals by exploring and reflecting upon the following questions for inquiry:

- How do culture and language contribute to my unique identity?

1.1.3 examine how they belong and are connected to their world by exploring and reflecting:

- What helps us to recognize different groups or communities (e.g., landmarks, symbols, colours, logos, clothing)?

1.2.1 appreciate how stories and events of the past connect their families and communities to the present:

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	<ul style="list-style-type: none">• appreciate how the languages, traditions, celebrations and stories of their families, groups and communities contribute to their sense of identity and belonging <p>1.2.2 analyze how their families and communities in the present are influenced by events or people of the past by exploring and reflecting upon the following questions for inquiry: What are some examples of traditions, celebrations and stories that started in the past and continue today in their families and communities?</p> <p>2.1.1 appreciate the physical and human geography of the communities studied:</p> <ul style="list-style-type: none">• appreciate the diversity and vastness of Canada's land and peoples
Rational	<p><u>Big Idea:</u> Overall, students will learn how to communicate with others, utilizing numbers 1-20 in their everyday lives.</p> <p>When learning numbers, students will be able to use numbers providing information, or gathering data.</p> <p>Incorporating language in the subject of math not only benefits the students to learn math concepts, but also learn how numeracy is used in other cultures, and symbols tied to the math that are an expression of Indigenous identity, and bring their language knowledge out of the classroom and into their everyday lives.</p> <p>Subject: Math Keywords: Language, Counting, Numbers, Îethka language of the Stoney Nakoda People, Culture</p>
Materials	<p>Îethkaîhâ Yawabi (Counting in Stoney) Picture Book</p> <p>210 small items such as feathers, beads, pennies, or cubes, paper clips, etc.</p> <p>20 pieces of paper with numbers 1- 20</p> <p>20 white board markers</p> <p>20 sticky notes</p> <p>20 blank paper</p> <p>1 whiteboard</p>
Lesson Activities	

1. Introduce the lesson and the book. Today we will learn/review how to count from 1- 20. Today we will read a book which teaches us how to count in the Îethka language of the Stoney Nakoda People, as well as review counting in English. This book will also show us images of items that are important or are a part of the Stoney Nakoda People culture/ tradition. Does anyone want to share what are some items important to you? Or your family? Or your culture? E.g. cherries are important to me and my family because I grew up in B.C., and we owned a cherry farm/ picked cherries every summer when I was a kid.
2. Read the book together with all the students. Have students repeat back the words in the Îethka language of the Stoney Nakoda People (pronunciation guide is in the book) as well as English, and hold up fingers in the air at the same time (up to 10). It could be fun to have students continue counting past 10 with their toes. This aims at having a visual, auditory and kinesthetic way of learning. Repeat this as needed until the class has a good sense of the numbers. Explain the pictures and the cultural significance as you go through the story.
3. Reinforce the numbers:
Play the "Pass the Rock" game to learn/reinforce the numbers 1-20. Before class get 20 sheets of paper and write a number (1-20) on each sheet, along with the spelling for it in the Îethka language of the Stoney Nakoda People. Shuffle the papers up so they are ordered randomly (for a very beginner group, keep it in order rather than random). Now make the ball– roll one sheet of paper onto a ball (with the number on the inside) and then wrap the next sheet (number inside) around the ball. Keep wrapping the sheets around the ball until all are used up and you have a ball. If you like, you can include feathers, small beads, or other small items associated with the number with each sheet of wrapped paper.

In class, get everybody to sit in a circle. Play some music and have everybody pass the ball around the circle until you stop the music. The person holding the ball when you stop the music unwraps the first layer, they say the number in English and in the Îethka language of the Stoney Nakoda People (help students with pronunciation- sounding out the letters). Ask for that sheet of paper and stick it on the board with the number showing. Have the student feel the number of items wrapped with that paper. Teach the number, how to say it, write it, and what it numerically means to the whole class. Have the student compare the number of items with the previous students. Ask which student has more, which has less, by how many more, by how many less? Help students compare the quantities of the items by feeling them, and placing them next to other students' items.

Start the music again and then stop it after the parcel has been passed around a while. The student holding the ball can unwrap the next sheet and

look at the number. Have the student then stick it on the board either to the left or right of the number already there, depending on if it comes before or after that number (e.g. if the first number was 9 and the second one is 19, then it should be placed after the 9).

Keep playing "Pass the Rock" until all the numbers are stuck on the board.

4. Play Put in Order::

Give each student a number sheet from the board from the previous game at random. If there are less than 10 students, give out more sheets per student but make sure the numbers they have are in sequence (e.g. give a student numbers 10 and 11, rather than 14 and 19).

The objective is for students to organize themselves to stand in a line in the right order based on their number, encouraging students to say the number aloud while trying to find their place. Once done, have students say out their numbers from 1-20 down the line (do this in English for beginning students or while starting out, strongly encourage students to say it in the Îethka language of the Stoney Nakoda People). Try to increase the pace for additional challenges. For advanced groups, have students do this in reverse order, or start with a random number/student and count from there forwards or backwards down the line. If time permits, try this game again at the end of class with students shouting out the number in their first language, if that language is English, encourage students to try it in the Îethka language of the Stoney Nakoda People. Feel free to introduce the idea of odd and even, and other math strategies if students are advanced.

5. Write the numbers 1-20 on the board activity:

Have the class help write the numbers on the board, to do so, draw 20 large squares on the board, 5 x 4. Call out a number and have a student write the number on the board. Remind students how to form the numbers using their knowledge of numbers 1-10, for advanced groups teach basic addition i.e. Seventeen is 1 and 7. The 1 is in the ten's value place so it really means 10, and then 7 is in the one's, so we have $10 + 7 = 17$. Keep calling out students to fill in the rest of the squares so you have all of the numbers 1-20 on the board.

6. Sorting:

Gather all the small items students unrolled from the ball game and place various piles with different quantities (between 5-10 items in each pile) around the class. Give each student a sticky note to write on. In pairs, have students circulate to each pile and count the number of items, and write down the number, then confirm with their partner. Circulate to assist as needed.

Have pairs then take a pile, and join with another group, have them count

	<p>how many items they have all together.</p> <p>7. Art: Give each student a blank page. Similar to the pages in the book, have each student pick a number that they would like to make a personalized art work around, and represent that number by drawing something about their culture, family, hobby, etc. linking it to the number. I.e. The book had 6 blueberries to illustrate the number 6.</p> <p>** The above activities may be split into 2 classes, or 1 long period. The goal is for students to practice and have a concrete and pictorial understanding of numbers 1-20. To differentiate for all students, some of the activities may be lengthened, shorted, or skipped.</p>
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Supporting Sources:

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