The Three Sisters

Renewing the World

EDITED BY PAULINE BRODERICK AND PETER JORDAN



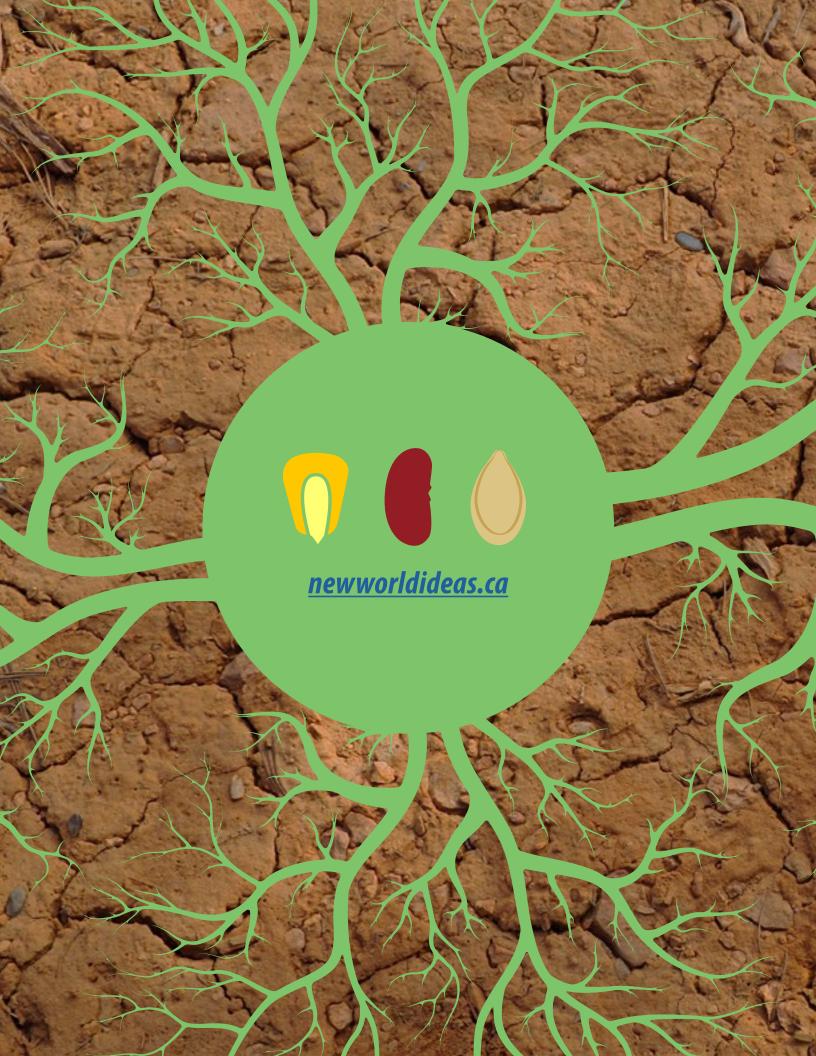
NEW WORLD IDEAS: INDIGENOUS INNOVATIONS
THAT CHANGED EVERYTHING

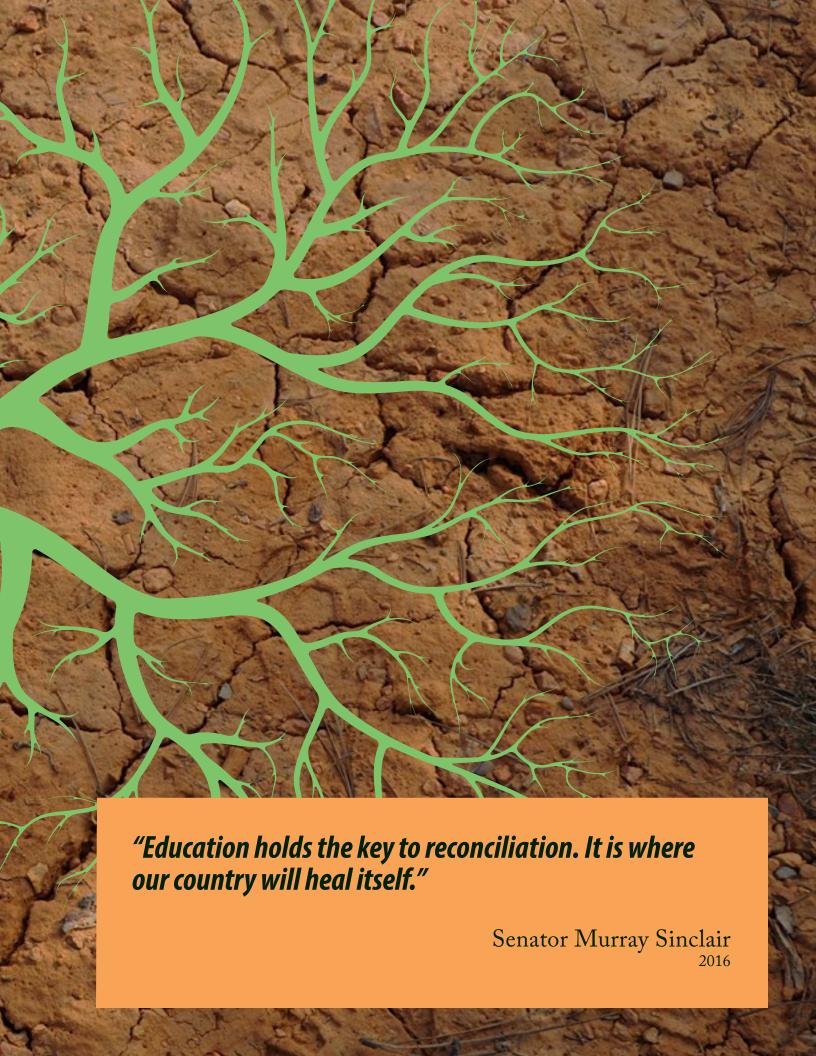
Video and Curriculum Resource

For a digital copy of the video and curriculum guide please go to www.newworldideas.ca

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THE STORY OF THE THREE SISTERS

Boozhou, Tansi, my spirit name is Awinigaabo ndizhnikaaz, that is Anishinaabe, "The Fog or Mist That Stands Alone/The Standing Fog" and my clan is the Golden Eagle, Ginew ndotem, the Ginew clan.

I am going to share the story of the Three Sisters from my understanding, with what has been shared with me.

Sky Woman came down to see Turtle Island and as she came down she gave birth to a daughter. This daughter had twin sons and in that process she unfortunately died. The Three Sisters came up from where she was buried - corns, beans and squash.

These Three Sisters were really close and they did everything together but as they grew older they began to fight with each other. The corn sister, upset with her other two sisters, went out into the field and stood there. As she stood in the sun all proud her two other sisters, beans and squash, become worried about her. The wind and the sun were withering away at their sister the corn so the bean sister being as loving as she is wrapped herself around to hug her sister. The bean sister is important to our people because she provides nitrogen so when she came to visit her sister she started to feed her in that old way.

The squash sister also being very proud wrapped herself around them and they all began to weep and share their love together. The squash sister is important because she grows big to block the sun's rays from drying out the area. The squash sister protected them from being burnt and kept the moisture and humidity in the ground.

Miigwech, Ekosani,

Lance Guilbault, storyteller / teacher Little Black River Anishinaabe Nation





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Earth by Leah Fontaine

INTRODUCTION

The Three Sisters - Renewing the World

The Three Sisters: Renewing the World video and curriculum support is Part Two of New World Ideas: Indigenous Innovations that Changed Everything.

Part One, The Birch Bark Canoe: Navigating a New World celebrates the genius of the birch bark canoe and explores it as a curriculum catalyst for inquiry based learning. The Three Sisters Project expands the conversation. Educators, students, administrators, engineers, artists, storytellers, scientists, scholars, filmmakers, activists, and entrepreneurs were invited to contribute to the development of the film and educational resource. It has been a collaborative journey inspired by the heart of the story itself.

"Food has the ability to unite all of humanity"

Pricilla Settee
Elder / Educator
2017

The Three Sisters story is told by many Indigenous Peoples through an oral tradition that transfers cultural information from one generation to the next. The Sisters - corn, beans, and squash, thrive together. They exemplify a mutually beneficial collaboration based on love, respect and compassion. They take us back to the invention of sustainable agriculture and illuminate a relationship with the land that preserves us. These are critical ideas as we look to feed ourselves in the future.

Teachers in today's classrooms seek ways and means to actively engage students in significant learning experiences. Inquiry driven, project based designs are positively influencing the learning landscape. It is in this spirit that we invited a diverse group of teachers and thinkers from schools and educational institutions to respond to the question:

"How would you use the story of the Three Sisters in your classroom"?

From Northern Manitoba to downtown Winnipeg; from senior year's mathematics to an early year's inquiry project; from a garden in the middle of a school yard to a garden in the middle of a parking lot, the responses were extraordinary. Individuals and partnerships brought their unique voices to the conversation and each offered Indigenous perspectives in action. We thank everyone who invested themselves in the project.

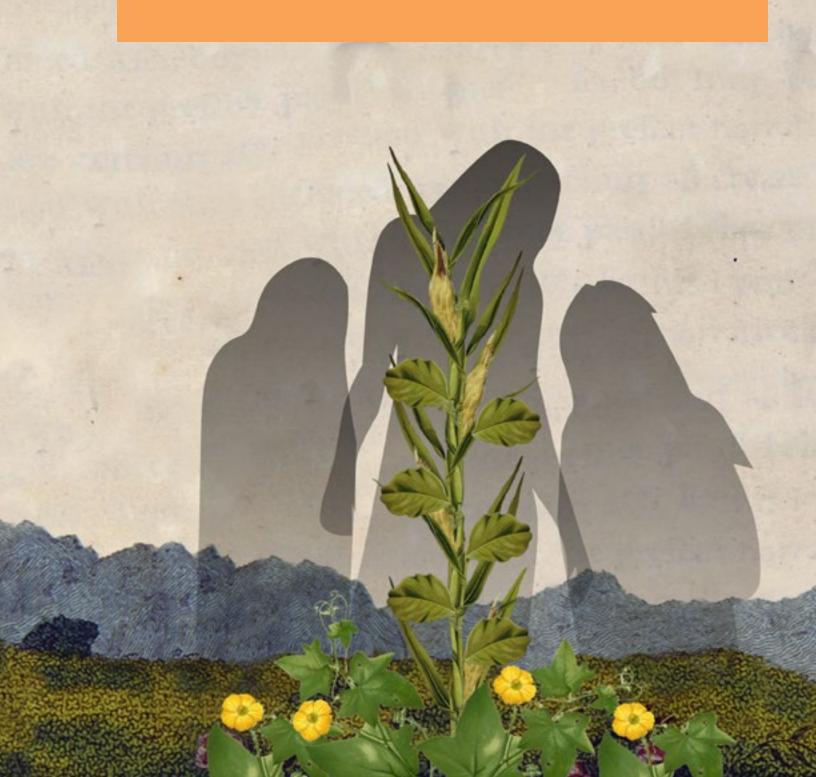
The Three Sisters have travelled through turbulent times and today, they find their way into our 21st century classrooms. Truly a remarkable journey!

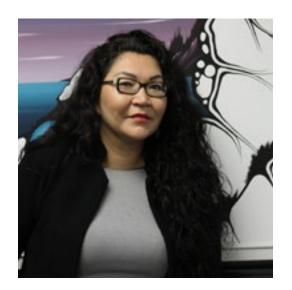
We hope this resource will help your gardens grow.

Pauline Broderick and Peter Jordan

"We are at this time and point on this planet where things have to change. We can all agree that we want to eat clean food and enough of it to keep us well. This is an everyone issue."

Tabitha Robin
Author / Educator
2017





Margaret Hart is one of the members of the original development team for the Manitoba First Nations School System. She is currently the numeracy specialist for the Manitoba First Nations Education Resource Centre. Margaret works with educators to promote First Nations perspectives in math programs through hands on activities, assessment and evaluation strategies. She is completing a Master's degree in Curriculum, Teaching and Learning at the University of Manitoba. Margaret is a fluent Cree language speaker.

MFNSS https://mfnerc.org

WNCP Guiding Principles http://www.academia.edu/7925620/Guiding_principles_for_WNCP_PONC_curriculum_framework_projects

WNCP http://www.wncp.ca/english/subjectarea/mathematics/ccf.aspx

Storying and Restoring Ourselves Comes First

Tansi, Nitotemak. As I listened to the story of the Three Sisters, I couldn't help but admire the love and respect they held for each other. The Three Sisters story conveys the teachings of interconnectedness, inter-relationship, balance, respect, and holism. In Cree philosophy we all have purpose. Man, woman, plant, animal, water, and stone are all livings things that share the Earth as family. The Three Sisters is a story of our family. Cree people hold a spiritual connection to the land and to Creator. Creator has given us all that we need to survive, the gift of family and purpose.

In 1998, I was part of a transition ceremony. The Elder's whisper still echoes in my head. As he lifted the eagle feather to the sky in prayer, he envisioned my purpose in life:

When you have matured, your work will be in the communities,

helping our people.

The gift you received in life is travel.

The Whitehorse was the messenger who travelled far and wide

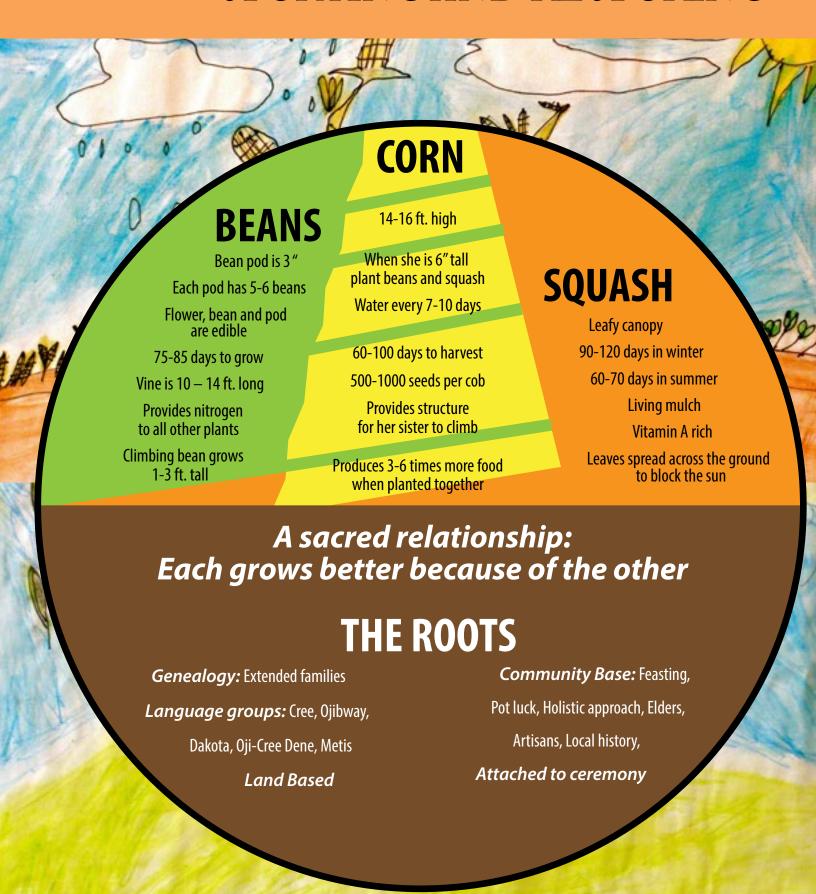
to deliver messages to our people. You are that messenger in the physical realm.

You are Whitehorse woman.

Fast forward 15 years, I am now working with MFNERC, and our vision states; "To help First Nations improve education for all learners to achieve *mino-pimatisiwin*, the good life." I travel throughout Manitoba to First Nation communities to deliver messages in programming, curriculum, and updated educational research.

I acknowledge that I am on the path that my ancestors have predicted.

STORYING AND RESTORING



IDEAS FOR THE CLASSROOM

Approaches for K-3 Mathematics

The Three Sisters story is told by many indigenous groups. It is part of an oral tradition that passes on cultural information from one generation to the next. As we restore to the classroom connections to the land, traditional knowledge, local histories, teachings, and language, we engage with stories that have been kept alive for thousands of years.

Storyboards: Visually Communicating Ideas

Storyboards are a visual way of communicating ideas. They are a series of static illustrations displayed in a sequence for the purpose of expressing stories, understanding a concept, and imagining possibilities. Storyboarding can be used to introduce the concept of the Three Sisters in mathematics from K-3, from a First Nations perspective.

Storyboards are one of several tools recommended when working with elementary students. They help make abstract ideas visual and concrete.

Storyboards can be centres and station activities where students collaborate to build conceptual understandings in interdisciplinary ways. "For Indigenous communities a holistic approach to education is key to identity."

Margaret Hart



Storyboard Ideas: Three Sisters Themes

Introduce the story of the Three Sisters. Create a storyboard about the relationship between The Sisters. Share with your partner. How is your story similar/different?

Examine a corn cob. How many seeds do you think it has? (counting-estimation)

How many leaves does each plant have? (addition)

What if we took one away? (subtraction)

Which is bigger, smaller, and wider? (space and shape)



MathArt Garden: Planting the Seeds of Possibility

This series of tasks invites students to make direct connections to cultural knowledge, by integrating relationships to the land, territory, local history, traditional knowledge and language with the Math curriculum.

Math concepts such as height, length, inches and feet, millimeters and centimeters, and processes like counting and estimating, matching and grouping, easily flow from these "hands on" investigations into a MathArt garden.

- 1. Provide students with corn, beans and squash seeds. Examine the seeds as a group and invite observations and questions. Organize matching seeds in small containers. Examine the seeds carefully and describe their similarities and differences. Can you draw and colour their shape? Glue the seeds of each plant to a paper plate repeating a single shape in a thoughtful design. Show the designs to the class and invite students to share their thinking.
- 2. Look at the seed packets to find out how high each plant will be when it is fully grown. How tall is a mature plant? Beans? Squash? What do seeds need to thrive? How do the Three Sisters help each other grow? How can we find answers to these questions?
- 3. Let's measure how tall The Three Sisters can grow. Introduce the concept of inches and feet or millimeters and centimeters. Provide rulers and measuring tapes depending on the grade level. Ask student to measure a piece of string to show how tall the plant will grow. The string represents the stalk of the plant. Tape the string to the matching paper plate.
- 4. Tape strings to the wall. Add the seed filled plates to illustrate the parameters of the growth cycle, from seed to matured plant.

Additional questions may be considered to add detail and nuance to the mathematical garden. How wide are the leaves of the plants? Measure and draw them. How much space is needed between them? How many days of sunshine do they need? How much water is required? Extend student thinking by introducing divergent, open-ended questions: Can we plant a Three Sisters garden where we live? What would we need to do to support them? Who in our community could help us create a Three Sisters garden? Invite students to share their thinking and to imagine a possible plan of action.





Artist, educator, and scholar, **Leah Fontaine** connects deeply with her Dakota/Anishinaabe/Metis heritage. She has worked in the performing and visual arts for many years. Fontaine completed her Master of Arts (Native Studies) in 2010 with a thesis entitled, Spirit Menders: the Expression of Trauma in Art Practices by Manitoba Aboriginal Women Artists. She teaches in the School of Fine Arts at the University of Manitoba and The Winnipeg Art Gallery. She completed her Bachelor of Education in 2017.

First Person: Living in Two Worlds

Aniin, Han, Tawnshi. My name is Leah Fontaine and my Spirit name is nagweyaab ikwe nindizhinikaaz. Translated from Anishinaabe it means Rainbow Women. I am tri-cultural, Dakota/Anishinaabe/Metis. My mother's family is Dakota/Metis, from Long Plains, Manitoba. My father's family is Anishinaabe, from Sagkeeng First Nations.

Artists are considered in the Anishinaabe worldview as *kamada wi ziyat*, people that are gifted. This was shared with me by a Knowledge Keeper who explained how artists are recognized as gifted with a sixth sense. I chose art as a tool to help myself and others in gaining a voice to express experiences of colonialism and as a tool for decolonization. I often use the lens of the Anishinaabe because it is how I view my world, as well as how I interpret it. My Indigenous point of view comes from Anishinaabe ceremonials which have influenced my art and teaching practices.

I grew up and continue to live in two worlds, the Indigenous and Western. I wanted to know both worlds to attain balance in an unbalanced society so I became a lifelong student in both the artistic and academic worlds. As an educator, I believe teachers and students can create their own medicine line; one that can intersect Indigenous and Western education. We can be successful living in two worlds where both educator and student can use Indigenous and Western pedagogies that encourage respect, relationship building, and reconciliation.

Orienting Ourselves in the Circle

As the Three Sisters story illuminates, the circle of life is fundamental to the worldview of Indigenous peoples. It is all encompassing and helps us to orient ourselves in the world. In the Circle there are seven locales that represent the lifecycle of plants and their relationships within our ecosystems.

ORIENTATION

The first position is Those Above - the Sun our Grandfather, who provides energy to the growing green plants.

The second position is Those Below - the Earth our Mother, who sustains life itself.

These are followed by the four directions.



IDEAS FOR THE CLASSROOM

Orientation to the Circle

Invite students to stand up and face north. How do we figure it out?

Once north is established, face south, east, and west.

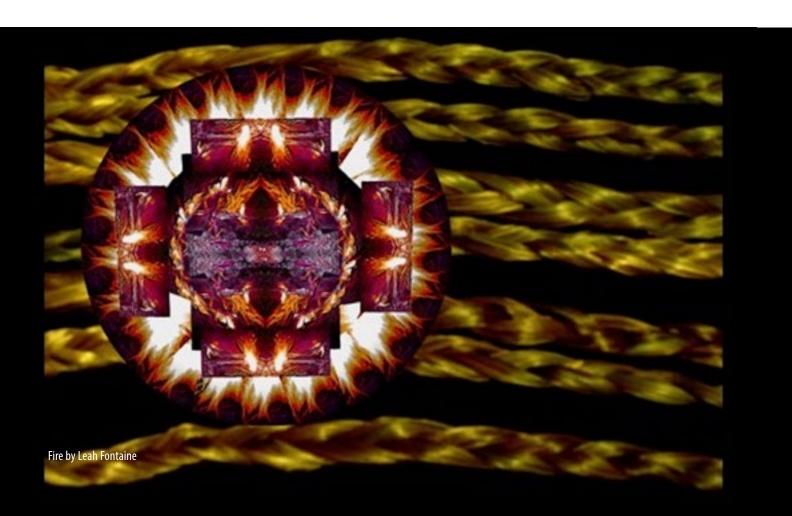
What other directions are there? Up - Down - In - Out?

Groups work together to create a physical expression of the directions. Add sound to the movement.

Once the directions are established, invite students to move through the growth cycle and relationship of the Three Sisters. As groups share their work, we see the cycle from seed to fully grown plant repeated.

Individuals illustrate their understanding of the circle and the growth of the plants through drawing, painting, or clay.

For more of Leah's ideas for the classroom see our website newworldideas.ca





Air by Leah Fontaine

KALE BONHAM KEITH FULFORD



Bonham Portrait by Reuben Boulette

Kale Bonham is an artist, activist, and teacher. She has been teaching in the Winnipeg School Division since 2012. She received her Bachelor of Arts and Bachelor of Education from The University of Manitoba. Kale has served as Creative Director for the Aboriginal Youth Organization and currently teaches at Argyle Alternative High School in Winnipeg.

You can see Kale's TEDx 2010 talk Building Bridges Through Community Provoked Art.

https://www.youtube.com/watch?v=hhWLhx5gpRQ

Aniin, Mikomeece Mitigoon ndishnikaaz, Bizhiw Nindoodem. My spirit name is Ice Covered Forest and I'm from the Lynx Clan. My ancestors are from Swan Lake First Nation. I grew up in two landscapes, the Point Douglas area of Winnipeg and rural Manitoba.

Art is the way I understand the world and communicate with others. My culture has not been an easy path to find; instead it's been a dance on the edge of mystery for me, as it is for many others.

My first four years of teaching were spent at *Niji Mahkwa* School. I am honoured to recognize the staff and students there as my family and my greatest teachers. Since moving to Argyle Alternative High School, I have had the opportunity to develop new relationships and to grow as a teacher. Working collaboratively with my teaching partner, I seek ways to engage students in meaningful learning experiences. The Three Sisters story fit naturally into our Urban Studies class. We ran with the essential question: "*How do we understand the inner city as our landscape and home?*" We jumped into the adventure of understanding our place, our land.



THE LAND



Keith Fulford has been a teacher with the Winnipeg School Division since 2008. He earned his Bachelor of Arts from Wilford Laurier University and a Bachelor of Education from The University of Western Ontario. A skilled lacrosse player, Mr. Fulford is recognized for his innovative approaches to teaching and his work in supporting student academic, emotional, and social growth.

Fulford portrait by student Willow Saunders

Boozhoo! Salut! Greetings!

I am thankful for the many teachers, students, colleagues and community members who have taken time to share with me. I am happy to be part of this publication. I enjoy being part of a community that is active in the discovery and creation of knowledge. If you wish to exchange ideas you can contact me at kfulford@wsd1.org

Design Approach

Story was the backbone of our learning process from beginning to end. The story of the Three Sisters helped our students learn the power of narrative. Ultimately the project involved students in examining the question 'what is a healthy community?' by experiencing the shape, form and expectations that are cultivated every day in our kitchens.

During this project based learning experience, students explored our food system from cultural, historical, nutrition and design perspectives. The process became our classroom story. It took us from telling, to tasting, to testing, and offered us the opportunity to collaborate and create together.



IDEAS FOR THE CLASSROOM

Understanding the Urban Food Desert through Project Based Learning



The term food security and urban food desert have been in the news and media recently. After seeing the map indicating the parameters of an urban food desert, students discovered that their school was located in one.

http://www.cbc.ca/news/canada/manitoba/buying-groceries-a-long-trek-for-family-in-winnipeg-food-desert-1.3345126

What is a food desert?

The Oxford dictionary defines urban desert as, "An urban area in which it is difficult to buy affordable or good quality food."

The Urban Studies class visited the North Point Douglas Women's Centre, where they learned that healthy food is not easily available to local residents and that food production within homes is a problem. Nutritious meal preparation is not a common practice because processed, boxed, and microwavable food is more convenient, fast, and familiar.

http://www.northpointdouglaswomenscentre.org

What can we do to help? How can we expand community expectations of what kitchens should be, and broaden our concepts of nutrition?

Our goal became creating a better environment for food security in an urban food desert.

We divided the task into 3 sections:

Nutritional Literacy/Food Security

- Students made lists of their questions about nutrition, broke into groups and found articles online with answers and shared their findings with the whole class.
- We visited Feast Cafe Bistro and asked questions about their ingredients and menu. http://www.feastcafebistro.com
- We also visited FortWhyte Alive and volunteered to help with the vegetable garden. https://www.fortwhyte.org
- We prepared a meal using only food from the garden.
- The students designed a Three Sisters soup and got feedback from a
 professional chef. They contributed their soup to a fundraiser for children's nutrition.



A Three Sisters inspired menu

Behaviour/Design

- Students cooked food in the school kitchen, and applied post-it notes where they encountered problems. (ie: not knowing where important utensils were, not having a measurement conversion chart, not knowing how to use certain kitchen objects, etc.) The post-it notes were then used as inspiration to redesign kitchen materials.
- Students spent time researching kitchen design and technology to see what is already available and created a list of the top 10 qualities of well-designed kitchens.

Storytelling, Communicating and Message Making

- We learned about symbol, icon and index.
- They selected nutritional facts and communicated them by making logos in symbol, icon and index forms. For example, we made 3 decks of cards .
- Deck 1 Kitchen objects
- Deck 2 Nutritional knowledge
- **Deck 3** Desirable emotions we seek as humans (love, attention, fun, escape, etc.).

Each student then picked one card from each deck and designed an object that embodied the quality using craft materials. We went outside and brought several hula hoops. We played charades using the decks of cards and hula hoops to become better communicators and observers. We redesigned kitchen materials using objects found on Kijiji and wrote a collective artist statement about the experience. Promotional posters were created to advertise an exhibit of student work in a public gallery.



Erin Berscheid graduated from University of Saskatchewan College of Agriculture with a Bachelor of Science in Food and Applied Microbiological Sciences. She has recently completed her Bachelor of Education from University College of the North. Erin is a mother, wife, teacher, farmer, sister, and northern resident.

UCN: https://www.ucn.ca/sites/academic/default.aspx

Think Local

I have lived in The Pas, Manitoba for most of my life. Agriculture has always been an essential part of it. Life on the farm helped me gain respect for hard work and taught me about our relationship with the land. During my studies at the University of Saskatchewan, I learned about the complexities of food production and I grew to appreciate the idea of utilizing local products to nourish and sustain our communities. As a northern resident and a new teacher, I am inspired to be creative in thinking about how a Three Sisters garden could be the basis for holistic learning and a possible food source to feed our community!

The Three Sisters story explains many concepts that are close to my heart. They show us the importance of agriculture, relationship and collaboration. They are used to cultivate appreciation for the contributions of Indigenous culture and to strengthen student's sense of place and identity. It is a story that can be easily adapted to any grade level in all parts of the province as it offers us opportunities to consider big ideas that are relevant today.

Ideas for the Classroom

All of the suggested activities lead to the main project of creating a Three Sisters garden using recycled materials. The suggested inquiry questions and investigations are based on Northern Manitoba environmental conditions and resources.

Story Telling

To begin, students will need to understand the story of the Three Sisters and the general concept of relationships. After the students watch the Three Sisters video, ask a local Elder to join the class and share the story of the Three Sisters from her or his perspective. Each nation has a unique version of the story and a local perspective can make it relevant to student experience. Elders also have the ability to personalize the story and add details.

NORTHERN LIGHTS

Our Ecosystem

Inquire into local growing conditions. Research the plants that thrive in the environment. What are the environmental conditions that impact plant growth? What would we need to do to create a Three Sisters garden in our school yard?

Northern communities have a limited growing season. Through research and experiments students will discover the supports the garden requires to survive in their geographical area. Plants are heat sensitive so students will have to analyze the amount of daylight their community receives. This in turn indicates the variety of seeds that can be used.

Data from weather websites, climate records or local experience can inform their planning. If computers are not accessible, students can observe and record observations for the first year and continue with the project in the following year. Do a field test of the soil that is available for planting. Using a jar and water, students can examine the different striations of soil and consider its composition.

Map it Out

Create a blueprint of the school yard on grid paper. A garden requires heat and light. By considering the location of trees, buildings or play structures, students can suggest an optimal location for the garden and calculate the shade projections from surrounding objects. This task invites us to locate shaded areas, utilize the angles and the position of the sun during the different times of the day, and calculate the soil surface area required to grow our Three Sisters garden.

The Health Benefit

The distance from farm to table in Northern communities is far greater than most. Transportation costs and limited shelf life impacts the quality and variety of food available. Students can to do a price comparison of food costs from various locations and research the challenges and health benefits of locally produced foods.

Time to Plant

Recycled containers can be collected and used as starting pots for the plants. Invite the students to personalize their containers with colours and images associated with their cultural heritage. When the class transplants the vegetables to the garden, the containers will illustrate and celebrate our diversity.



Asfia Gulrukh Kamal is a doctoral student at the Natural Resources Institute at the University of Manitoba. She is studying under Dr. Wanda Wuttenee, an internationally known professor and researcher in the field of Aboriginal Community Economic Development. Asfia is currently researching the impact of hydro flooding over traditional food resources in northern Manitoba Indigenous communities. She has been working with *O-Pipon-Na-Piwin* Cree Nation (OPCN) since 2010. Community engagement and Indigenous ways of knowing are the methodologies which inform Asfia's inquiry process through all phases, from participatory community led design to dissemination.

http://umanitoba.ca/institutes/natural_resources

Lived Experience

My story starts in my homeland, Bangladesh. When I came to Canada for graduate work a decade ago, my stereotypical 'romantic' impression of North America was built on popular TV shows like Family Ties and Dallas: beautiful houses with trimmed lawns, clean neighborhoods, children making snowman in winter, no slums, poverty or hunger and an abundance of resources distributed evenly to all.

To my surprise, I found something very different in northern Manitoba.

I went to *O-Pipon-Na-Piwin* Cree Nation for the first time in 2009. I was shocked to see a community only twelve hours away from Winnipeg that was deprived of basic needs such as running water, secure affordable food, proper housing, health and educational services. What are the systemic and social forces at play that allowed this inequity to continue? My personal quest to learn more about Indigenous worldviews and relationships grew deeper from this point onwards.

As part of my research and field work, I participated in creating a community based food program, and worked with Elders, community food champions, hunters, fishermen, and trappers as they harvested food from the land. Their stories are lived experiences expressed through fictions, dreams, and wit, rich with allegorical meaning rooted in cultural principles.

Late Elder Vivian Moose generously shared many stories of how her parents would tell her to pick only the ripe berries and fish the right amount. She taught me the concept of peaceful coexistence and non-interference as part of her worldview.

I want to share what I have learned from Elders and my experience.

CONNECTIONS

IDEAS FOR THE CLASSROOM

The video, *The Three Sisters: Renewing the World*, can serve as a catalyst for a diverse range of learning experiences related to science, history, agriculture, creative learning, and literature. The complexity of the project can be modified to suit any grade.

Activating Interest

Create an idea rich environment. Fill the room with examples of corn, beans, and squash. Provide maps of Manitoba that illustrate growing seasons. Images, books, and farming tools can stimulate thinking and provoke questions. Ask the students to think about what a plant needs to survive? What food stuff is grown in your location? Where does the food you eat come from? How far does it have to travel? Gather student questions and post them for easy reference.

Pre View

Invite students to consider the title of the film. What do you think it is about? What information does it give you? Who produced it? Explain that you intend to view the film a few times together.

Viewing

For the first time, just watch and listen. Challenge them to see how much information they can take away from their first viewing experience.

In subsequent viewings, watch all or part of the video together as a group.

In small groups, create a graffiti board of the big ideas in the film. Draw attention to common responses. All ideas are affirmed and valued.



Create a Graffiti Board

Graffiti boarding, "enables a small group to share and record what they know and wonder about a topic" (Short, Harste, Burke, 1996.) Students need easy access to markers and big sheets of paper. Every member of the group is invited to express their thinking through words or drawings. Visuals can build and expand on ideas generated.

eworkshop on-line teaching resource: http://www.eworkshop.on.ca/edu/pdf/Mod36_coop_graffiti.pdf
Facing History: https://www.facinghistory.org/resource-library/teaching-strategies/graffiti-boards



Research and Representation

Work with a partner. Distribute kernels of corn to each pair. Examine them and share observations. What do you know or want to know about corn? How can you find answers to your questions? Markers and paper are readily available.

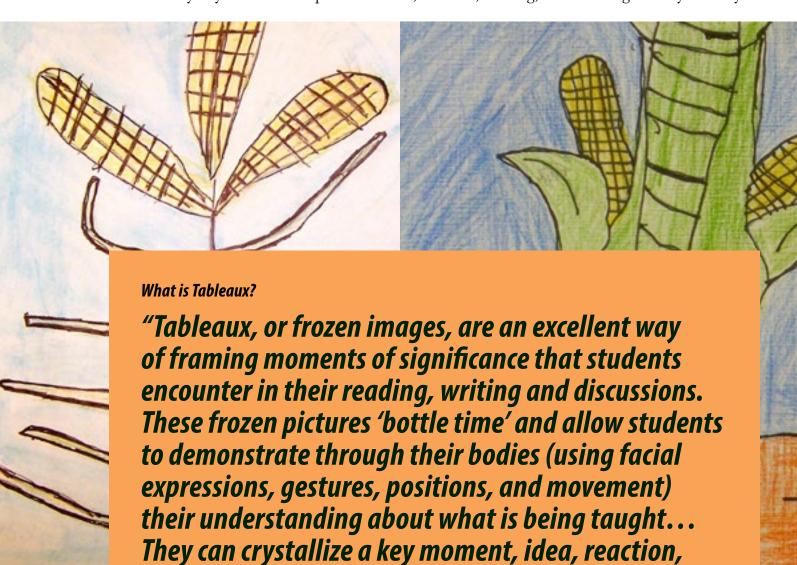
Create Tableaux

With your partner draw the seeds in relationship with what they need to grow.

Share your work with the rest of the class.

- Form groups of 4 or 5. Create a series of tableaux that illustrate the connections identified by the class.
- Choose an organic element in nature (a pumpkin, an insect, a piece of grass etc.)

Tell the story of your relationship to it in words, numbers, drawing, dance or song. Share your story.



statement or theme that the rest of the class as the

audience can then study, analyze and discuss."

Kathleen Gould-Lundy (2008)

Teaching Fairly in an Unfair World
p. 142

E. LEIGH SYMS KEVIN BROWNLEE



E. Leigh Syms PHD. C.M. is Curator Emeritus in Archaeology at the Manitoba Museum, Adjunct Professor in the Department of Anthropology, University of Manitoba, and a life-long promoter of the richness of First Nations ancient heritage. He has written numerous works on First Nations early heritage. In recent years he has focused on writing books such as: Stories of the Old Ones from the Lee River, Southeastern Manitoba: The Owl Inini, Carver Inini, and Dancer Ikwe (2014); Inninew (Cree) Material Culture and Heritage at Sipiwesk Lake: Results of the 2003 Archaeological Survey (with Teija Dedi and Wendy Hart-Ross) (2013); and Kayasochi Kikawenow: Our Mother from Long Ago (with Kevin Brownlee) (1999).

Leigh Syms: Shared Knowledge

I have spent over six decades recovering exciting new information into First Nations ancient heritage and finding ways to share this material. In addition to scholarly and other publications, I enjoyed having many school classes visit the laboratory at the Manitoba Museum where First Nations students discovered their incredible heritage. Saturday interactive classes for grades 5-6 students were also held for 15 years. Working with students has always been rewarding, whether visiting classrooms, being involved with heritage weeks in Indigenous communities such as *Nisichawayasik* Cree Nation, or working at public events. The enthusiasm and interest of the youngsters, particularly in elementary classes, is inspiring.



TIME DEPTH



Kevin Brownlee is a member of *Kinosao Sipi* Cree Nation (Norway House). He obtained his Master's Degree in Anthropology from the University of Manitoba. Kevin was hired as the Curator of Archaeology at the Manitoba Museum in 2003. His research focuses on the archaeology of Manitoba's boreal forest and the emerging field of Indigenous archaeology.

Kevin Brownlee: The Long Term Continuum

My interest in archaeology grew out of a desire to understand more about myself and where I come from. I was adopted at birth and raised in a non-Indigenous home in Winnipeg. My adopted family supported my interest in my Cree heritage and culture.

I have always marvelled at the knowledge held by Indigenous people. The western education system becomes increasingly specific as we go through school, university and graduate studies. An Indigenous education system is broad. We need to know zoology, botany, geology, ecology, engineering, diplomacy, meteorology, chemistry, and physics, just to name a few. I think this is one of the reasons why I like archaeology so much. It has so many different research areas.

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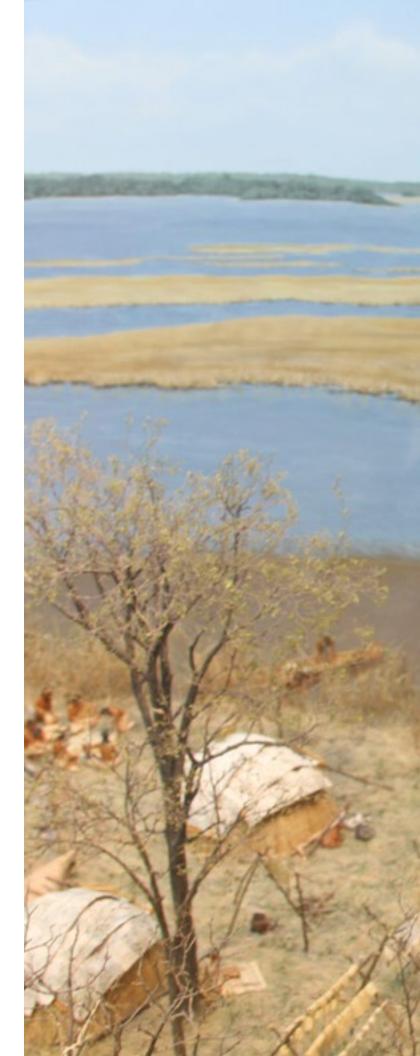


I was fascinated with the idea that my ancestors were able to carry all they needed on their backs or in canoes and sleds. As I grew up I began to understand that much of what my ancestors carried was in their minds. When I was 15, it happened that The Manitoba Museum developed a Young Archaeologists Club for youth between 10 and 17. We were shown how to recover artifacts and identify them. We learned about Indigenous technologies such as pottery and how to make a spear thrower or *atlatl*. It was through this group that I met Leigh Syms for the first time. Little did I know what an influential impact Leigh would have on my life.

Things took a dramatic turn in 1993 when I had the opportunity to be a summer student with the Government of Manitoba, Historic Resources Branch. This summer job took me into many First Nations communities. I met many wonderful people in the community who saw the benefit of archaeology, and believed it to be an important tool to empower youth. Archaeology can provide youth with a sense of belonging and identity that is grounded in our rich history. It was my interest in archaeology that gave me the first opportunity to reconnect with the Indigenous community.

I have been working in archaeology for the past 25 years and feel First Nations people need to take a prominent role in the field. Archaeology has had a very negative history for Indigenous people. We were disenfranchised from our own past. First Nations people have a major role to play in interpreting our past and history including archaeology. I always treat archaeology as a piece of the puzzle. Oral history and traditional knowledge help to fill in the gaps of archaeology. I believe that through archaeology, we can help define our Nationhood.

Indigenous people have an unbroken connection to the past. The European education system is divided into various fields of study including History, Anthropology and Archaeology. I feel these are arbitrary divisions. I have always treated archaeology as research into Indigenous history. Whether examining a pair of moccasins or a 5000 year old spear point, this is part of my history and I am equally proud of all of it. This work is on a long term continuum.





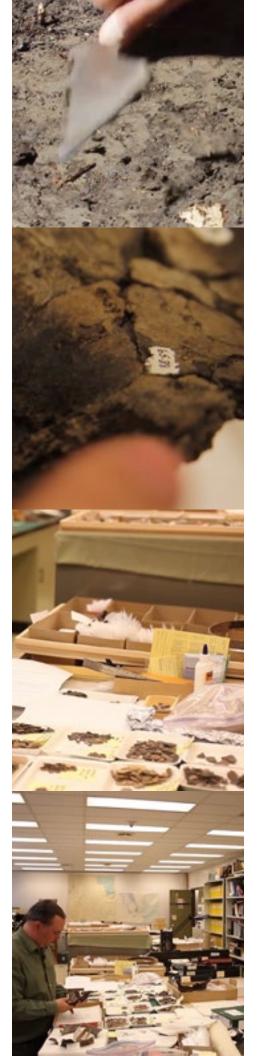
IDEAS FOR THE CLASSROOM

Optimizing Community Resources

As archaeology and other sciences are discovering, the Indigenous world is far older than previously understood by western science. Several exhibits in the Manitoba Museum integrate current research and insights in their public galleries. Heritage and science centres like the Manitoba Museum provide opportunities to better understand our present by encountering artifacts and ideas from the past. We learn how our ancestors adapted to the world around them by studying the things they left behind.







A Manitoba Museum Field Trip

Artifacts recovered from the archaeological dig at Lockport are on display at the First Farmers Exhibit in the Grasslands Gallery at the Manitoba Museum. This dig uncovered evidence of the oldest known Northern farm in North America.

The First Farmers Exhibit in the Grassland Gallery provides evidence that local First Nations were successful small-scale farmers before Europeans arrived. Accepting this evidence required rewriting history and revising earlier stereotypes. The exhibit focuses on the Three Sisters but also delves into the phenomenal knowledge of plant ecology that First Nations have cultivated. Whether domesticating plants to improve productivity to feed large communities, or enhancing dietary diversity, evidence clearly supports that First Peoples possessed the sophisticated knowledge necessary to nurture them.

As we look at the dietary contributions made by First Nations over thousands of years, we realize that the Three Sisters are a small part of a large suite of foods that remain important to us today. For example, potatoes, sweet potatoes, cacao (chocolate), avocado, tomatoes, peanuts, vanilla, as well as an ever-increasing range of 'new' popular foods such as chia and amaranth make up an important part of the world's daily diet. In addition, First Nations developed plants such as cotton and rubber which have had major impact on the world economies.

The Three Sisters story and video can be used by the classroom teacher to stimulate a range of inquiry questions. From the nature of archeology to the history and science of the food we eat, from the many contributions of First Nations peoples to the future of sustainable agriculture, students are encouraged to explore significant questions of interest.

What do Archaeologists Do?

Review the section of the video that takes us to The Lockport Dig. (6:45-10:15) What are the archaeologists doing? What did they find? What do these findings reveal about First Nations farming practices? What can we learn from the evidence and vestiges of the past? What can the artifacts tell us about the lives and habits of the people who created them?

What is Indigenous archaeology?

Invite students to research the field of Indigenous archeology and to share their findings with the class. What are the challenges and contributions of the field?





What plants did First Nations peoples cultivate?

For an extensive list of plants cultivated by First Nations peoples, go to newworldideas.ca.

Select a plant from the list and find out as much as you can about it. Where does it come from? Who developed it? How did they do it? What were the processes involved? When was it introduced into Europe? How is it used today?

Share your findings with the class.

Create a list of recipes for The Three Sisters. Try them out.

Who are First Nations peoples?

- How long have they been in North America?
- What languages were spoken? What Indigenous languages are spoken today?
- What is companion planting and why is it important?
- What is the role of storytelling in passing on scientific knowledge?

If you want to go deeper in time, Professor Leigh Syms latest inquiry takes us into the earliest known plant harvesters in the Americas. For more information go to:

The First Farmers of Mount Verde newworldideas.ca/firstfarmersofmountverde







Randy Herrmann, P.Eng. is an engineer, teacher, and advocate for Indigenous ways of learning in math/science. He is also the director of the Engineering Access program (ENGAP) at the University of Manitoba. ENGAP is the largest and most successful program of its kind in Canada and serves as a model for others seeking to support Aboriginal students in earning an engineering degree.

Randy is a key contributor to the development of this curriculum resource. He is an original member of the production team.

http://umanitoba.ca/faculties/engineering/programs/engap/index.html

Indigenous Ingenuity

As an engineer of Indigenous descent, I have always been amazed at the lack of attention given to the inventions and engineering feats of our ancestors. They walked softly upon Mother Earth and yet they enjoyed many of the benefits of a rich science and engineering culture. They had shelters that were cool in the summer and warm in the winter. They had the ability to move across the continent utilizing natural highways formed by river systems and drainage basins. They had weapons to procure food and to protect themselves. They had well-designed and well-made clothes that kept them dry and warm. They had recreation activities that led to many modern day sports. They had medicine and medical practices but perhaps their greatest legacy is the knowledge of plant husbandry and farming practices.

First Nations peoples domesticated wild plants at a rate that has never been equaled or surpassed. To them we owe the tomato, potato, cassava, chocolate, vanilla, peanuts, sunflower, tobacco, wild rice, peppers, papaya, pineapple, avocado, sweet potato, a wide variety of nuts, and of course the Three Sisters; corn, squash, and beans. The ancient people who domesticated these crops were nothing short of brilliant engineers and scientists. They patiently bred and crossbred wild plants until they achieved their goals.

I have always been fascinated by how numbers and mathematics allow us to peek behind the curtain where the great and wonderful wizard of creation does his magic. I was inspired by The Three Sisters video to come up with these mathematical inquiries for use in the classroom. My goal is to demonstrate the beauty of nature and the role math plays in the its underlying structures in the same way I learned about the natural world while sitting at my grandfather's feet as a young child.

My Pépère would not have known about Fibonacci as he was not allowed to go to school as a child, but he knew about nature and he recognized the patterns in nature. Education has shown me that many of these patterns in nature are represented by Fibonacci's numbers. I developed these activities to combine the rich lessons of my Pépère with the oftentimes dry and difficult math I learned in school.

NUMBERS IN NATURE



IDEAS FOR THE CLASSROOM

Numbers in Nature: Fibonacci and His Wonderful Sequence. It's everywhere!

These mathematical exercises can be adapted to suit grades 6 - 12. They invite students to explore the Fibonacci sequence to learn what it is, where it came from, and how it is manifested in nature.

Start with a brain tease.

Post the following numbers for all to see.

1, 1, 2, 3, 5, 8, 13, 21

In small groups, invite students to study the pattern and make observations.

Groups share and document their thinking. What do we see? Do the numbers have anything in common? What is the next number in the sequence? How did you arrive at the next number?

Each number is the addition of the two previous numbers.

This sequence is called the Fibonacci Numbers or the Fibonacci sequence. It helps us understand the patterns of the natural world.

Can you find examples of Fibonacci numbers hidden in nature? Pine cones? Flowers? Corn?

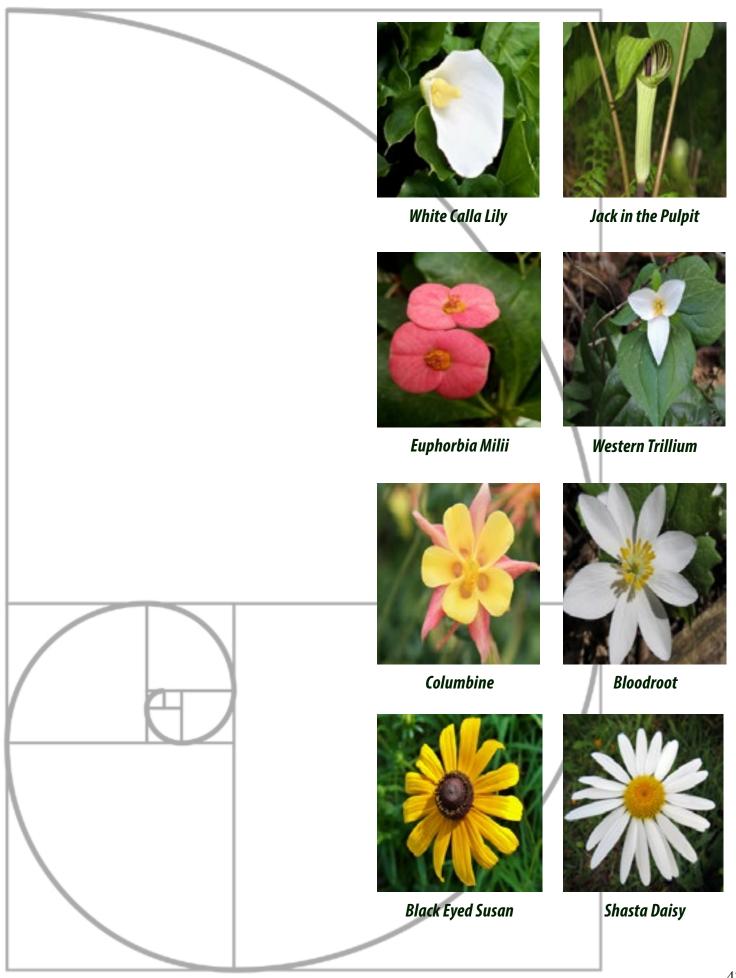
The Fibonacci numbers can be found in corn- in the clockwise and counter clockwise spirals that the kernels make on a cob. Also, the ears and leaves on a cob of corn usually follow a Fibonacci pattern!

For those interested in further study:

Who was Fibonacci and where did he come from?

What is the connection between Fibonacci numbers and The Golden Ratio? Phi? Pascal's Triangle?

More of Randy's Fibonacci mind stretches are located at newworldideas.com



The Three Sisters Project - Victory School

Victory School is a K-5 elementary school located in Seven Oaks School Division. The Aboriginal Education policy in our division encourages and supports continuous growth in Indigenous Education.

We believe that by developing a strong understanding of Indigenous culture and integrating an Indigenous perspective throughout the school culture, we can support the work of the Truth and Reconciliation Commission. We recognize our students as change makers and future leaders. It is through the education we provide that reconciliation becomes attainable.

Victory School acknowledges and celebrates the impact Indigenous practice has on the growth of our students. Leadership thrives at Victory through strong philosophy and action focused on Sustainable Development and Indigenous Education. We work diligently to create equity whenever possible and recognize the inequities of the past. We ensure all our students feel represented and have a sense of belonging.

As the Principal of Victory School I am proud to be one member of this inspiring team of educators who always put children first.

Melissa Delaronde

Seven Oaks Divisional Policy http://www.7oaks.org/Resources/aboriginaleducation/Pages/default



TRANSFORMATION



Amanda Normand-Telenko Classroom Teacher

Amanda Normand-Telenko is proud of her Metis Heritage. Her roots run deep and come from the Red River Settlement. She is a mother of three, who currently works as a Grade 2/3 Teacher. Amanda Normand-Telenko was a successful graduate of the Community Aboriginal Teacher Education Program (CATEP) in partnership with Seven Oaks School Division. Working full-time as an educational assistant in Seven Oaks School Division allowed Amanda to pursue her education degree part-time. Amanda has been teaching with the Seven Oaks School Division for 5 years.

CATEP https://www.7oaks.org/Resources/aboriginaleducation/CATEP/Pages/default.aspx



Lita Fontaine - Artist in Residence

Lita Fontaine is of Dakota, Anishinaabe, and Metis descent. She is a mother, sister, educator, and visual artist. She received her Master of Fine Arts from the University of Regina and she has taught at the School of Art, University of Manitoba. Fontaine is a celebrated artist who maintains a vibrant professional practice. Her work is featured in collections nationwide, at the Winnipeg Art Gallery and on murals throughout the city. As Artist in Residence for The Seven Oaks School Division for seventeen years, she has collaborated with teachers to integrate art into the curricula. Her approach is hands on and emphasizes creative process as an integral part of learning. She believes that the visual arts act to nourish emotional, physical, mental, and spiritual growth. Over the five month inquiry process, Lita documented the project in photographs.

Visit www.newworldideas.ca to see all her pictures of the project.

https://umschoolofart.wordpress.com/2017/05/17/sanksannica-lita-fontaine-book-launch/

"I see Indigenous education as an internalized way of knowing culture, history and identity. I bring this passion to my work every day."

Melissa Delaronde Principal Victory School

A Sign of the Times

Amanda Normand-Telenko: Classroom Teacher Grade 2/3

When approached about the Three Sister initiative, I immediately became excited to start the journey with my students, Lita Fontaine, and Victory School. The idea ignited a spark within me. This was a wonderful way to weave in Indigenous perspectives through inquiry. As a Metis woman, it's important for me to provide opportunities for our children to learn about Indigenous culture and history. I want my students to be proud of their identities and more importantly, to have a sense of belonging.

Thinking back to my own primary school experience, I can't recall being afforded many opportunities to learn about my own culture. As an adult and a mother, I wanted this to change. I enrolled in the Community Aboriginal Teacher Education Program in partnership with Seven Oaks School Division and University of Winnipeg. This allowed me to work full-time as an educational assistant while attending university part-time towards an Education degree.

It is truly a sign of our times that Indigenous perspectives are now being embraced within our curriculum. Our education system is looking to the future to provide generations to come with a foundation that creates pride, identity and inclusion. I am proud to be part of this positive change.





Through the Eyes of a Teaching Artist Lita Fontaine: Artist in Residence

We began by discussing an approach to our inquiry project with the students. We talked about 'conscious gardening.' What does that mean? As a class, we discussed and agreed it meant to co-create with nature with utmost reverence. First, we must begin with a foundation of mutual respect. How can we work together as a whole with nature and Mother Earth, rather than separately? What does it mean to be respectful?

After watching the Three Sisters film and examining support material, we asked the students to start role-playing the creation story. The video served as the main catalyst to the learning of the Three Sisters story and tradition.

The next step was interpreting the story visually. Sketching out the Three Sisters story made the narrative become visually alive. Each student account of the creation story was personal and unique. The students explored using pencil, pen, and ink producing a finished watercolor illustration.

We created a small classroom display of the Three Sister story, sharing all of the illustrations during a Parent Teacher day. There were many compliments!

Before prepping and planting the Three Sisters seeds, a readymade terracotta pot was given to each student. They were asked to draw onto the raw clay pot their images of the Three Sisters story. Each terracotta pot took on a life of its own. The three-dimensional painted clay vessels made a beautiful covering for the Three Sister seeds. Journaling of the Three Sisters growth was recorded each day.

The final part of the journey came as a celebration. The Three Sisters trio, corn, bean and squash were made into a soup shared by students and teachers for their own nourishment; sustaining them physically, spiritually but most importantly, sustaining cultural tradition.



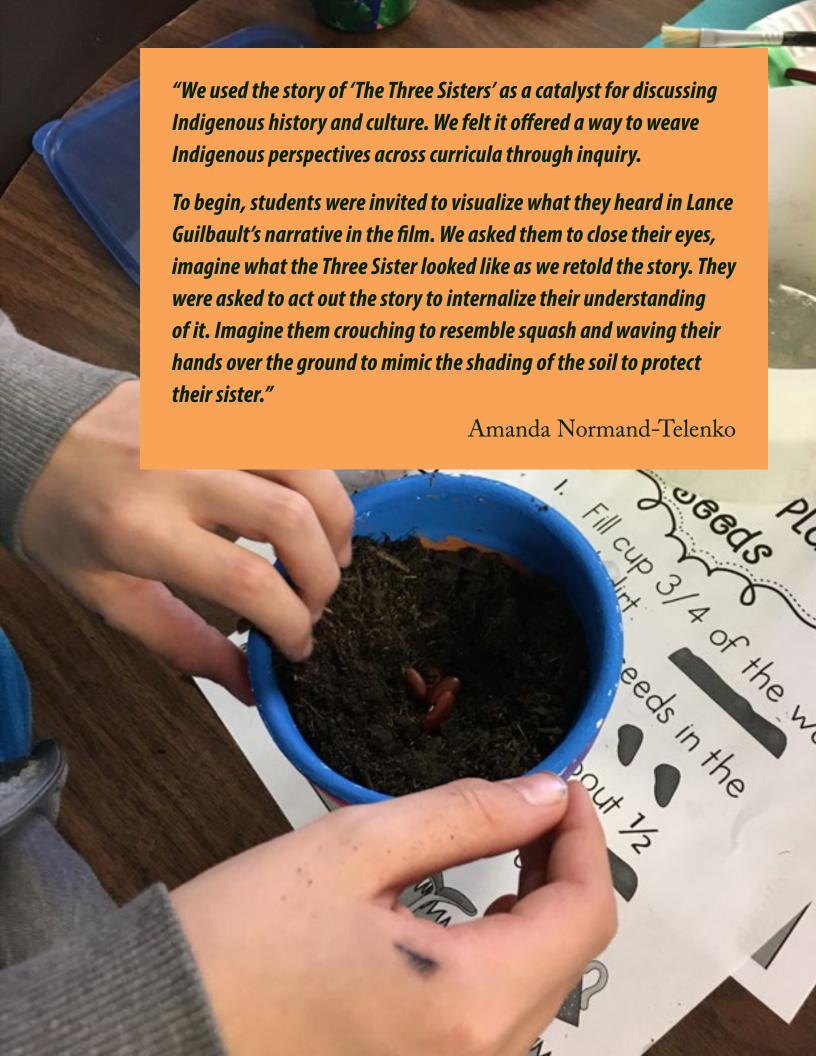
"The vegetable trio sustained the Indigenous peoples both physically and spiritually. In the Creation Story, the plants are always grown, eaten and celebrated together."

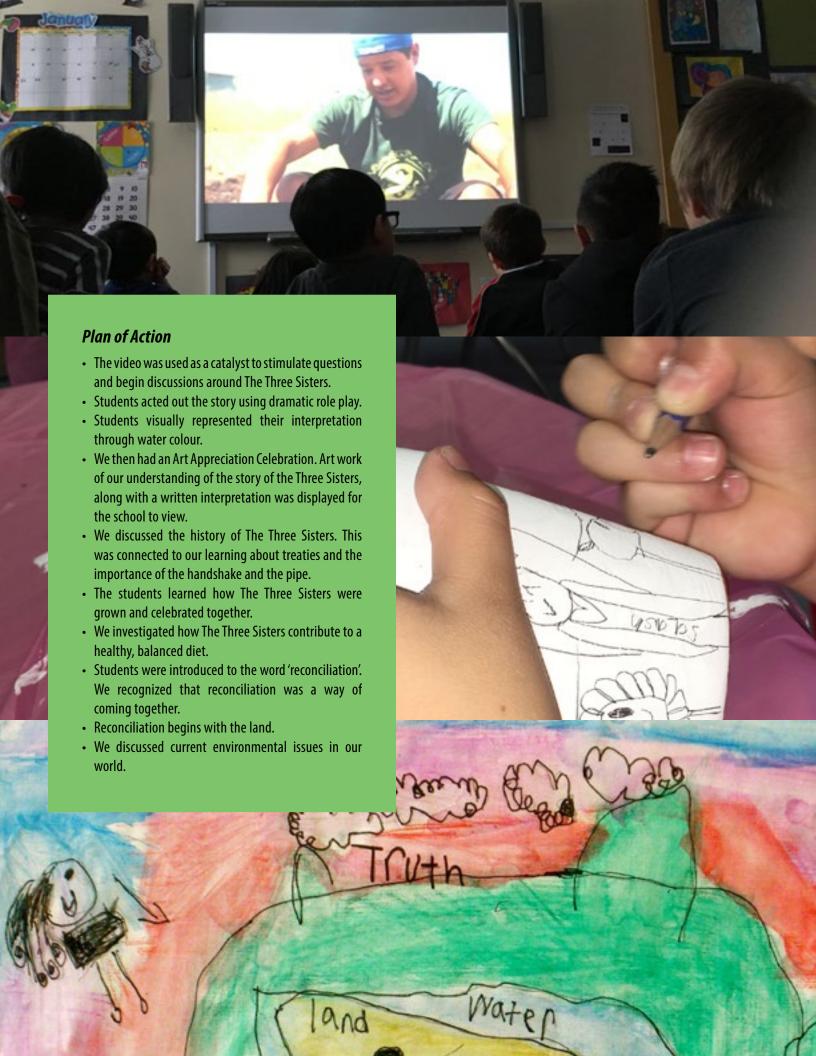
Lita Fontaine



IDEAS FOR THE CLASSROOM









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LINKS

PARACHUTE MEDIA LAB INC.

http://www.parachutemedialab.com

EDUCATION AND TECHNOLOGY: MANITOBA ACTION AND REFLECTION

http://mediawisesolutions.com/Education%20and%20Technology%20-%20Manitoba%20Action%20and%20Reflection.pdf

MANITOBA EDUCATION: INTEGRATING ABORIGINAL PERSPECTIVES INTO CURRICULA

http://www.edu.gov.mb.ca/k12/docs/policy/abpersp/ab_persp.pdf



ABOUT US

Organizing Committee

The organizing committee for the New World Ideas is made up of individuals and organizations interested in education. Our purpose is to develop educational resources that encourage and celebrate Indigenous knowledge in the classroom and workplace.

Wendell Wiebe

Wendell is the chief executive officer for Manitoba Aerospace Inc. He holds a Master's Degree in Education and has worked in the aerospace industry for over 25 years. Manitoba Aerospace is known for its innovative programs and collaborative approach.

Barbara Bowen

Barb is the manager of special programs for Manitoba Aerospace and has a background in education and human resources. She is a liaison to educational institutions including Tec Voc High School, Neeginan College, Red River College – Stevenson Campus, Faculty of Business at the University of Winnipeg and the Faculty of Engineering at the University of Manitoba.

The Three Sisters Project is one of Manitoba Aerospace's many initiatives to encourage Indigenous youth to seek out careers in science, technology, engineering and math (STEM).

Randy Herrmann P.ENG.

Randy is an engineer and the director of the Engineering Access Program in the Faculty of Engineering, University of Manitoba. ENGAP is the most successful program of its kind in Canada, graduating over a hundred Indigenous students into the world of engineering.

Peter Jordan

Peter produced the videos and companion books for New World Ideas: Indigenous Innovations that Changed Everything. As president of Birch Bark Productions, he is dedicated to telling Canadian stories. He is a multi- award winning television writer/broadcaster and his show *It's a Living* ran for seven years on the CBC National network.

Pauline Broderick

Pauline is a veteran teacher, educator, and curriculum developer with a special interest in the arts and social change. She has taught in the public school system and in the Faculty of Education at the University of Manitoba. She works with Birch Bark Productions and is currently a writer and editor with New World Ideas: Indigenous Innovations that Changed Everything.

Development Team

Rylaan Gimby

Rylaan is a multi-media artist, videographer, and graphic designer who specializes in 3D/Motion graphics, animation, and performance. He is co-owner and director of Parachute Media Lab Inc. Rylaan created the layout and graphic design for New World Ideas video and curriculum resources.

Rennie Redekopp Ph.D

Rennie taught junior and senior high school for twenty eight years and is currently an instructor in The Faculty of Education at The University of Manitoba. He is an author, past president of ManAce, an award winning educator and co-owner of Media Wise Solutions. Rennie designed and developed the web site for the Three Sisters Project.

Leslee Silverman

Leslee is the founding Artistic Director of Manitoba Theatre for Young People and a Governor General's Laureate. Her vision was instrumental in creating MTYP's Aboriginal Arts Program and in the building of the theatre at the Forks. Leslee assisted The Three Sisters project as a feedback reader in the final writing stages. She is currently at SFU 's Writers Studio.

Special Thanks go out to **Dr. Ralph Mason** for insightful analysis and continuing conversations about the complexities of teaching and learning.

Thanks to Lance and Tabitha for getting us started.

ACKNOWLEDGEMENTS

We provide this resource free of charge to any interested teacher, so we are very thankful for the generous support of the following:







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"In order for any society to function properly, it must raise and educate its children so they can answer what philosophers such as Socrates, and Plato, and Aboriginal Elders, call 'the great questions of life'. Those questions are: Where do I come from? Where am I going? Why am I here? Who am I? Children need to know their personal story."

Justice Murray Sinclair 2014