

Bio-based Materials

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Cultural Objective: Students will learn how these examples were used by our ancestors long ago and also how they are used today.

Cultural Information: The PPT presentation will demonstrate how bio-based materials were used long ago and how they are used today. Students will also learn why the materials are biodegradable and the plant the material is derived from. For example, latex, a familiar item we use today, comes from rubber trees, a common house plant.

By definition, a bio-based material is a material intentionally made from substances derived from living (or once-living) organisms. Some are biodegradable. Examples include: [Cellulose fibers](#), [polylactic acid](#), [bioplastics](#), [engineered wood](#), [zein](#), [cornstarch](#), and [grease](#).

Cellulose fibers: rope was made out of hemp and string was made out of the inner bark of a tree. Each had a purpose in our way of life. Fibers from deer tendons was used as string to sew our leather clothes together. Rope was used to tie our items up in the trees when we went each season to gather what was needed for winter. The inner bark was used to tie canoes together, our wigwam frames had to be tied together to keep the warmth in.

Our ancestors did not have polylactic acid and bioplastics. I saw them when I became a laborer for a labor union in the 1970-1980's. We had plastic plates, forks, knives and spoons to eat with and had no idea how they were made.

Engineered wood or rather natural wood: we made our wigwams, canoes, willow baskets which we used for picking berries, or birch bark basket for collecting maple syrup from the trees, fires to keep us warm during the cold weather. Anything that was natural was used and then left to deteriorate into Aki (Mother Earth) as years passed.

Zein (corn): Corn was one of our main sources of food. We would grind it up and would make bread out of it and add it to our meals for a filler.

Cornstarch: this is not what it was called long ago because we didn't mix or have the scientific method to do that then. We did however, use the derivative of corn in our soups or meal planning because it was easy to dry and light weight when traveling to each camp in the spring.

Grease: this was another one of our main commodities that we used. We used it as medicine, to add to our soup for taste, and on our bread like butter. The tallow was used to make [pemmican](#), which is berries mixed with buffalo or deer tallow and then dried for the winter months. If you have heard of bear grease or bacon grease, both were used for medicine and put into our foods to make them taste better. Natural materials from local resources. These materials are made from [figue plants](#) and the rubber tree. Both plant and tree are autochthonous to Colombia. All this information made me think about what my Father, Elders, Grandparents, and Aunties/Uncles taught me throughout my life. Also, the education I received as I traveled to different reservations.

Part of the reason I am mentioning two different plants is because if you come into my home, you will see many different types of plants which are used for the exchange of oxygen and carbon dioxide. I breathe out carbon dioxide and I give it to the plants and they give me oxygen in return. Our lungs take in oxygen and eliminate carbon dioxide for

the plants. I have had plants from the age of 20 to now. I used them in my studies at the University of Missoula where I got my BA in Communication/Dance. I did a whole semester on how to grow plants from seeds to full grown; that was one of my subjects for my communication class called public speaking.

Now the plants I will talk about are ones that I have encountered throughout my life and have had one of them in my home as a house plant. First, the figue plant is an evergreen succulent perennial which forms a fountain of upright, long, sword-shaped leaves with slightly wavy margins, resembling undulating ribbons. I have many succulents in my home. I see them all over in different stores when spring comes each year. Figue plant is used for rope or baskets.

The rubber tree is one that I have had for many years in my home and when I broke a leaf, a white substance would come out. The substance was a little sticky, but I did not know that this sticky substance had a purpose. White-natural latex is mainly harvested from the rubber tree.

Author biography:

Boozhoo, my name is Miiigizi Ikwe, Wapski Makwa indoodem, Mikanock Wajii. My other name is Frances Allard, I'm from the Turtle Mountain Chippewa Reservation in Belcourt, ND. I am Anishinabe Ikwe (Ojibwa)/Cree/Mitchif and the eldest of 8 siblings. I have two sons, an adopted daughter, a foster daughter and an adopted grandson. I have seven grandchildren and one great-granddaughter. I raised two other young men as well; one lives here in Belcourt and the other lives in Colorado. My father was a marine, my mother was a beautician, and when I was a child, we traveled throughout the US/Guam/Japan before returning to the Turtle Mountain home of my parents in 1959 when I was 14 years old.

I have had a lot of educational experiences, both formal and informal. I graduated from Turtle Mountain Community High School in 1963; got an LPN degree in 1974 through the Lake Region Jr. College in Devil's Lake, ND and was trained in Belcourt; completed a BA in Communication/Dance in 1985 (Missoula, MT) during the summers I worked as a woodland fire fighter; added an AA in Chemical Dependency in 1993 and an AA in Child Abuse/Neglect in 1994 from Lummi Community College (which later became Northwest Indian College) in Bellingham, WA; and then went back to TMCC for an AA in Commercial Art/Graphic Design in 2005; and picked up many certificates along the way. During those years, I was educated also by many Elders from different tribal nations and finally came home to Belcourt in 1995 and began my studies with all the Elders in the Turtle Mountains. I learned a lot and was honored to sit with them and learn from them. I also went to Canada to learn from the other half of my blood line, the Cree Nation. My travels took me across the US/Canada and across the ocean to Guam and Japan, learning many cultures along the way. The very first teachings I learned were the Seven Teachings of the Ojibwa, which came from my Aunt Edna Cloud who began this journey for me.

While I was in college, I learned to do research and found that very interesting. That training has become even more useful now that I am a board member of the Turtle Mountain Chippewa Tribal Nations Research Group, a board that reviews and approves all research done on the Turtle Mountain Chippewa Reservation. There are individuals from various universities who want to do research with our Turtle Mountain people, and the board makes sure they are following the guidelines of the Tribal Nations Research Group. We are the protectors of our people in the research/data arena.

I learned to sew in high school and loved it. This is one of my gifts that I have. I design all of my regalia (the traditional clothing/accessories) that I wear for Ceremonies/Pow Wows/special occasions. Since I have moved home, I have designed and made regalia for my grandchildren and other young people as well as others who request it of me.

I am a Cultural Advisor for TMCC and ND EPSCoR. I work with 6-12 graders in ND EPSCoR NATURE camps during the summer months and ND EPSCoR NATURE Sunday Academies during the school year. I write cultural supplements for each of the STEM topics covered in the various STEM activities. If I am not familiar with a STEM topic, I do research on the topic so that I can figure out which cultural information fits best with it. This I have been doing for 22 years. I work for TMCC as an instructor, and was asked by the TMCC president and vice president many years ago to develop an archive for our artifacts by our people (clothing, tools, baskets, sculptures, etc.) for the college, which I did for 6 years. I

am also currently working for the Turtle Mountain Chippewa Heritage Center for the last 3 years as an archivist/assistant for our artifacts and the tour guide to explain the historical way of life of our people here on the Turtle Mountain Chippewa Reservation. I also do research on various artifacts in our collection to find the importance/year/geographic origin of the items.

I realize that my passion is all about what I have learned and how to give back to our families, relatives, friends, and those who want to know who we are as Anishinabe people. I am grateful for the teachings of our elders, our young people of today and my children. I am also a sponsor for those who are struggling with alcohol/drugs on a one-on-one basis, as well in the sweat lodge. I work with the youth, adults, and the elders, outside this community in all four directions.

As I look at my journey throughout my life, my vision is to work with my people in any way I can to teach what I know, and pass it on to all that are interested in our Native way of life. I live simply so that I can live in peace and harmony in nature, which means I will follow the Seven Teachings in a good way. Those teachings came from my elders and I take the lessons they taught me seriously and to heart. So, my mission is to guide those who want the Seven Teachings in their life. The Seven Teachings are Love, Honesty, Humility, Bravery, Respect, Wisdom and Truth.