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MITIGATING THE CLIMATE CRISIS THROUGH LAKOTA TEACHINGS



WPI

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ABSTRACT

OUR PROJECT focused on investigating Lakota philosophies of living and applying what we learned to the climate crisis. We conducted archival research and semi-structured interviews with Lakota elders. We came to understand the Lakota people perceive their relationship with nature differently than those who live in the dominant culture. Lakota people perceive everything as a sacred relative. We believe this philosophy of inter-relationship will help mitigate the climate crisis. We shared what we learned through short videos and an audio landscape.

ACKNOWLEDGMENTS

PROFESSOR THOMAS BALISTRIERI

We thank Professor Balistrieri for serving as both the sponsor and lead advisor for our project, along with introducing us to his world of relationship and environmental thinking.

PROFESSORS CREIGHTON PEET, AND LESLIE DODSON

We thank Professor Peet for leading us through ID2050, Professor Dodson for giving us direction and guiding our multimedia elements.

INTERVIEWEES

We give special thanks to the relatives we have met through this experience: Harold Compton, LaRayne Woster, Andrew Iron Shell, Amelia and Chris Cenotti, and Andrew Bentley for taking time to share a piece of their world and for giving us the opportunity to connect and build lasting relationships.

WORCESTER POLYTECHNIC INSTITUTE

We thank our university for providing the necessary resources and supporting us.

EXECUTIVE SUMMARY

The Earth is currently facing an existential threat due to the climate crisis. Thousands of species are becoming extinct at rates far above previous levels, potentially placing us in a new, sixth extinction period (Barnosky et al., 2011). Global temperatures are rising and causing extreme weather patterns (Thirumalai, 2017). The United States produced 139.6 million tons of landfill in 2017 alone (Environmental Protection Agency, 2020). Oil production will peak, then cause shortages before the latter half of the century (Curtis, 2009). Without correction, global populations will face upcoming hardships as a result of these accumulating issues.

Human actions have brought about this climate crisis (Baum, 2012). The self-centered and greedy mindset of the dominant culture fuels dangerous behaviors towards nature. The dominant culture treats nature as an item to be used and lacks consideration of long-term consequences. To address this erroneous mindset, we studied Lakota culture and philosophy in the hopes of discovering a solution. Lakota people create relationships with nature, rather than seeing nature as a toy to be used and discarded.

To learn about Lakota and indigenous philosophies, we started with archival research. We watched the documentary *Yakoana* (1997) and read *Neither Wolf nor Dog* (Nerburn, 1994), *Paying the Land* (Sacco, 2020), and *Zuya* (White Hat, 2012). Next, we conducted semi-structured interviews with two Lakota practitioners, Amelia and Chris Cenotti; Native American Studies and Lakota Language Teacher, LaRayne Woster; Chief Operating Officer of the Saint Francis Catholic Mission, Harold Compton; and Community Outreach Specialist of the NDN Collective, Andrew Iron Shell.

From these interviews and background readings, we learned about the phrase “**Mitákuye Oyás’iŋ**,” which means “all of my relatives.” This phrase stands at the core of Lakota philosophy. Lakota people believe that everything and everyone—animals, plants, rocks, mountains, the Earth—is their relative. A connection runs through all things, so the Lakota people believe everything and everyone is sacred. Sacred has a different connotation in Lakota culture than it typically would elsewhere. While the dominant culture definition of sacred is “something that deserves worship,” Lakota people have their own definition: “something worthy of respect and awe.” A sacred item deserves to be treated with non-violence and shown love. By viewing everything as sacred, Lakota people see the world as one deserving absolute kindness and importance.

While undertaking our research, we created a series of short videos posted to the popular social media app, TikTok. Our goal with this unique platform was to introduce the dominant culture to Lakota history and concepts tied to the ongoing climate crisis. The video topics ranged from “Who are the Lakota people?” to the Land Back movement. In addition to our tri-weekly TikTok videos, we also produced an audio landscape that created a narrative for climate change through Lakota speakers. We used clips from our interviews, sounds from the prairie, news headlines, Lakota songs, and our voices. Using the audio software Reaper, we put all the audio clips together and uploaded it to Spotify’s music and podcast platform. You can access our landscape at <https://open.spotify.com/show/OX0IzZc1Tm0bKdHcQxtK4a>

Based on our research, we have written a letter to the dominant culture stating mindset changes to mitigate the climate crisis. We encourage people to understand and eventually practice a different way of thinking, feeling, and acting. We envision the dominant culture changing to practice living with nature instead of in nature, seven generational thinking, and relationship building with all things. It is our hope that the dominant culture will stop its self-centered behavior and realize that everyone and everything is sacred. We believe if every member of the dominant culture were to adopt these changes, we could cooperatively avert the climate crisis.

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INTERVIEWS

INTERVIEWS

WE CONTACTED two Lakota museums and one individual referred to us by our sponsor. We wanted to hear how the Lakota people have been affected by climate change and their efforts to address the climate crisis. Additionally, we longed to learn and to understand what these people, who are indigenous to this land, have come to know, feel or believe must be undertaken to mitigate this climate crisis and the ensuing extinction

AMELIA AND

CHRIS CENOTTI

WESTMINSTER, MASSACHUSETTS

Lakota Practitioners

HAROLD COMPTON

ST. FRANCIS, SOUTH DAKOTA

Chief Operating Officer,
Saint Francis Catholic Mission

LARAYNE WOSTER

CHAMBERLAIN, SOUTH DAKOTA

Native American Studies and
Lakota Language Teacher,
Saint Joseph's Indian School

ANDREW (ANDY)

IRON SHELL

RAPID CITY, SOUTH DAKOTA

Community Organizer,
NDN Collective

AMELIA AND CHRIS CENOTTI



Amelia and Chris Cenotti, WPI alumni who married shortly after graduation, live in Westminister, Massachusetts. Amelia studied Biomedical Engineering and is now a mental health counselor. Chris studied Computer Science and Theater and is currently a computer programmer. Neither of them are native to South Dakota, but they practice the Lakota tradition. Professor Balistreri introduced them to the Lakota tradition 21 years ago while they were students at WPI. Since then, they have visited the reservation numerous times and participated in Lakota ceremonies there.

“EVERYTHING IN THE WORLD AROUND US IS DYING TO BE WITH US AND LOVES US AND IS WANTING TO BE CONNECTED AND WANTING TO HELP.” - AMELIA

“IF YOU REALLY BELIEVE THAT THE LAKE DOWN THE ROAD IS YOUR RELATIVE, THAT IT'S ALIVE, BREATHING, AND PROVIDING FOR YOU, AND YOU'RE PROVIDING FOR IT AND HAVE A RELATIONSHIP WITH IT, YOU'RE NOT GOING TO GO DUMP TRASH IN IT. THE SAME WAY I'M NOT GOING TO GO DUMP TRASH IN MY BEST FRIEND'S BEDROOM.” - CHRIS

HAROLD COMPTON



Harold Compton works with the Saint Francis Catholic Mission, currently acting as Museum Director for the Father Buechel Museum. Harold has previously been a deputy director for the Rosebud Sioux Tribal Land Enterprise, where he worked on land management. Harold also sat on the Board of Directors for Thunder Valley Community Development Corporation, an organization located in Pine Ridge developing sustainable housing for the reservation.

“THERE'S NO PLANET B. WE ARE ALL ON THIS ONE ROCK TOGETHER, SO TO ME IT MEANS TO TREAT EACH OTHER WITH RESPECT BECAUSE WE ARE ALL RELATED.”

“BY PRACTICING WHATEVER BELIEF YOU HAVE WITH MOTHER EARTH, I DON'T CARE WHO IT IS, IF YOU REALLY SET YOURSELF ASIDE, YOU'RE MADE OF THE EARTH, THE SAME THINGS THE EARTH IS MADE OF.”

LARAYNE WOSTER

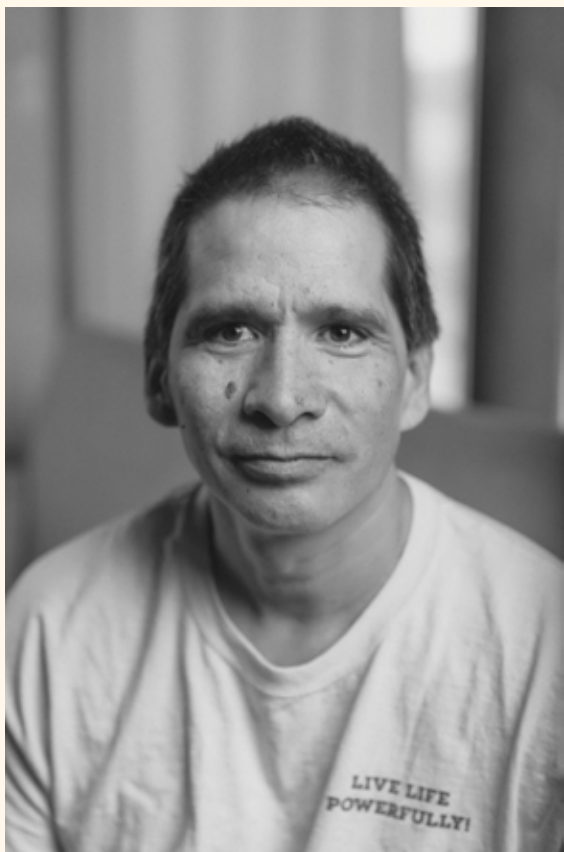


LaRayne Woster teaches Lakota language and culture at Saint Joseph's Indian School, a Catholic residential school in Chamberlain, South Dakota. LaRayne teaches the children that they do not have to choose between Christianity and Lakota traditions and encourages them to find the similarities between the two faiths. She is Lakota and is passionate about teaching kids about who they are and where they come from. Since the Lakota language and culture has slowly been dying, she hopes that in the future, these children will continue to share what they have learned to future generations.

“IT'S OUR BELIEF THAT WE ARE PART OF THE EARTH. WE DON'T OWN THE EARTH; WE'RE TO TAKE CARE OF HER. SHE IS TO TAKE CARE OF US.”

“ONLY TAKE WHAT YOU NEED. JUST BECAUSE THERE'S A WHOLE FIELD OF SAGE, YOU KNOW YOU'RE NOT SUPPOSED TO PICK IT ALL. YOU'RE SUPPOSED TO LEAVE SOME SO THAT THERE'S ANOTHER CROP NEXT YEAR.”

ANDREW IRON SHELL



Andrew Iron Shell is a community outreach specialist with the NDN Collective, an all-indigenous organization that aims to support indigenous communities in the issues they face. Andrew began his work advocating against the health inequity of Tribal populations. He has previously been with the Thunder Valley Community Development Corporation, where he helped build a regenerative community development project. He wants to engage community members in discussions on the climate crisis effects and get them involved.

“WE ALWAYS SAY SHARE THE STORIES. BUT ALSO SEEK OUT ACTIVISM THAT'S HAPPENING IN YOUR OWN NEIGHBORHOOD, BECAUSE WHETHER YOU SEE IT OR NOT, IT'S HAPPENING THERE. GO BACK TO YOUR OWN COMMUNITIES AND SUPPORT GROUPS THAT TRADITIONALLY YOU DIDN'T SUPPORT. YOU KNOW, BEING A GOOD RELATIVE.”

OUR LETTER TO THE WORLD

OUR LETTER TO THE WORLD

Our generation has already experienced the effects of a climate crisis-stricken world. Natural disasters have claimed the lives of tens of thousands each year while displacing hundreds of thousands more. In just one generation, we may see the total destruction of our current ways of life.

The origins of the climate crisis are rooted in the values of the dominant culture. Our culture of individualism tells us that we must fend for ourselves, that a person's value comes from the material wealth they possess, and that everything exists for us to take. These insidious values damage members of the culture and the overall well-being of the planet. When corporations extract resources from the ground, little thought gets placed on the lasting repercussions of physically altering the environment. Human development has trampled the biodiversity of once lush areas. Service-based industries have taken convenience to the ultimate extremes, resulting in the proliferation of single-use waste products. Our value of material goods has created a culture of toys, where the one with the most toys wins. We live in a time of unhealthy competition and will race to our destruction unless we first acknowledge our erroneous stance.

However, there is a way to lessen this climate crisis' impact, one with lasting benefits for the world. These practices have existed for thousands of years in the Lakota tradition. In order to survive our rapidly deteriorating planet, the dominant culture must adapt to these alternative ways of thought, feeling, and action.

THINK FOR SEVEN GENERATIONS

Every action has consequences. We can easily see the consequences that affect us, and these are what drive our decisions. However, it is not enough to think only about us. With each action must come the thought of consequences for future generations. Specifically, we must ask ourselves, “Would this action create or destroy for the seventh generation after me?”. Every day is a gift given to us by our ancestors of seven generations before. By thinking this way, we can provide the same gift back to those after us. We could leave our Earth better than we found it. Alternatively, we may be the last generation to inhabit it.

With this thinking, there may come times when action would make our lives more difficult but benefit future generations. The Lakota people have a phrase for these situations: “waniktacha lecamu welo,” which means “I do this so that my relatives may live.” It is up to us to embrace the discomfort these situations create. If we do not face pain and discomfort head-on, we merely dismiss it onto the next generation.

Seven generational thinking should feel empowering: our ancestors endured difficult times and persisted for us to be here. We can continue to offer the same to our next generations. Waniktacha lecamu welo.

EVERYTHING IS YOUR RELATIVE

The term “relative” appears in “waniktacha lecamu welo.” Our traditional view of relative views just family members as relatives. Lakota people perceive the term relative differently. *Everything* is our relative. Everything means all humans, but it also includes rocks, trees, rivers, the sky, stars, the Earth, and all things in-between. At the most basic level, we are composed of the same elements that make up everything in the universe. We are all connected in some way.

Accepting everything as a relative means acknowledging that everything is worthy of the same respect we give to our loved ones. The Lakota people have another phrase, “Mitákuye Oyás’iŋ,” which directly translates to “all my relatives.” It serves as a constant reminder that the world we live in deserves awe, care, and non-violence. We need to give the same respect to the ground we walk on, as to the great forests and expansive prairies. Mother Earth has taken care of us, and we need to take care of her in return.

LIVE WITH NATURE

Too many people view nature as something to take, something to be used. This thinking stems from the way we view nature. Our current understanding says that nature is something we visit, something that we spend time in. However, this understanding fails to see the whole picture. Nature is something that we are with. By hiding in our concrete cities, we have pushed away and broken our relationship with nature. Nature has become something we view as “over there.” This fragmentation has allowed corporations to tear apart the Earth without dispute from the people. We have to accept nature as our relative and invite it back into our lives. When we spend time with nature, we rebuild our relationship with the Earth. We become more centered as humans and more compassionate for life.

When we spoke to Harold, Andy, and LaRayne, we felt honored by the kindness and warmth they showed us. While the three of us call the Pacific Northwest our home, we could connect with these residents of South Dakota and envision the prairie like we were there. Throughout this project, we have learned much more than we ever thought we would and now see the world differently.

Imagine a world where we hold everything as sacred: a world where we know and care for our neighbors, a world where we welcome nature in our cities, where every interaction comes from a place of good heart and utmost respect. While this vision may sound utopian, nothing is stopping us from acting in these ways. Each one of us has the power to change the world surrounding us, for good or evil.

These concepts may seem simple, but they are difficult to put into practice. If they were easy, there would be no climate crisis. To adopt these ideas, we each first have to put them into practice. We have to think about seven generations before we can appreciate human efforts in the past. We have to feel that everything is our relative to see the kindness, beauty, and awe in all. We have to experience life with nature to mitigate our crisis inducing actions. The dominant culture must change its ways for humanity to survive. Armed with this knowledge, you have the power to bring about that change.

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APPENDICES

APPENDIX A:

MULTIMEDIA PRESENTATION

We decided to present what we learned via two artistic forms of multimedia. According to Crain (2018), the number of readers on a given day has dropped from 26.3 percent in 2003 to 19.5 percent in 2016. Media consumption has moved towards digital content. To connect with our intended audience, we came up with these exterior forms of media presentation.

For the first form, we used the massively popular social media platform, TikTok. In the United States, TikTok has 100 million monthly active users and 50 million daily active users (CNBC, 2020). TikTok enables small creators to become ‘viral’ or reach that broad audience with little to no previous connections to an already established audience. TikTok’s appeal comes from videos’ compactness, with most users limited to creating content of one minute or less. This format directly appeals to the dominant culture, as Lorenz-Spreen et al. (2019) showed that the increased media consumption had driven a collectively reduced attention span to particular topics. These short videos and, subsequently, short windows of given attention limit our ability to convey the topic’s full complexities. We intend to start viewers on a path of understanding the harm we face by failing to prevent the climate crisis.

For our second deliverable, we created an audio landscape of the prairie. We included stories we heard from our interviews, indigenous songs gifted to us, and our narration. This format follows the oral tradition of the Lakota people and moves slower than the short form TikToks. Audio soundscapes call upon visual memories and make the listener feel like they are a part of the dialogue, not just listening to it. With this longer format of a presentation model, we were able to better articulate our recommendations.

PRE-PRODUCTION



TikTok videos are less than one minute long and require nothing more than a cell phone to film and edit. The audience of TikTok prefers content made in-app, so videos shot with higher quality equipment and professional settings are often discouraged. Because of this, we filmed each TikTok on our phones directly.

For each TikTok, we drafted a script beforehand. Our TikTok scripts are located in Appendix B.

FIGURE A.1:
SCREENSHOT OF A TIKTOK

For the first step of creating our audio landscape, we started by storyboarding our initial ideas. We utilized Miro, a free web-based collaborative whiteboarding tool, to create an outline of our audio landscape structure. This gave us a plan of action and layout for our story, without writing a line of dialogue. In week five, we began drafting a full script and starting organizing interview snippets in a Google Document. We finalized our script in week six, located in Appendix C.

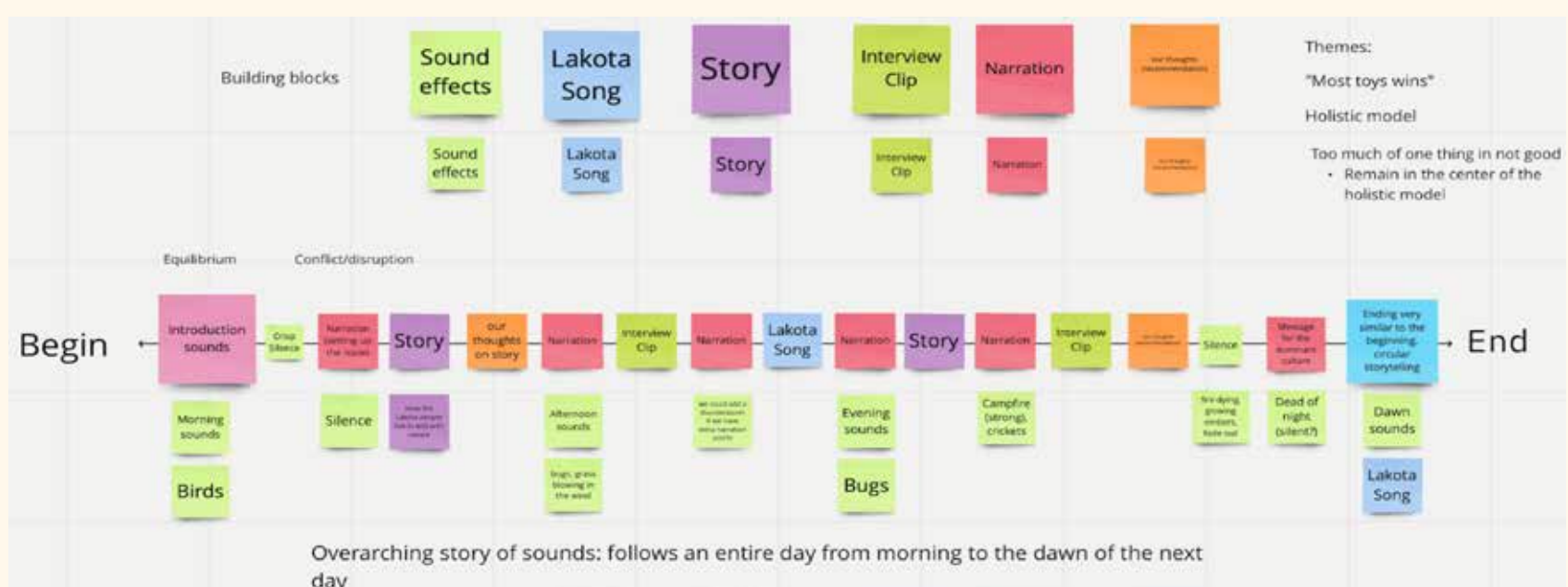


FIGURE A.2: OUR MIRO STORYBOARD

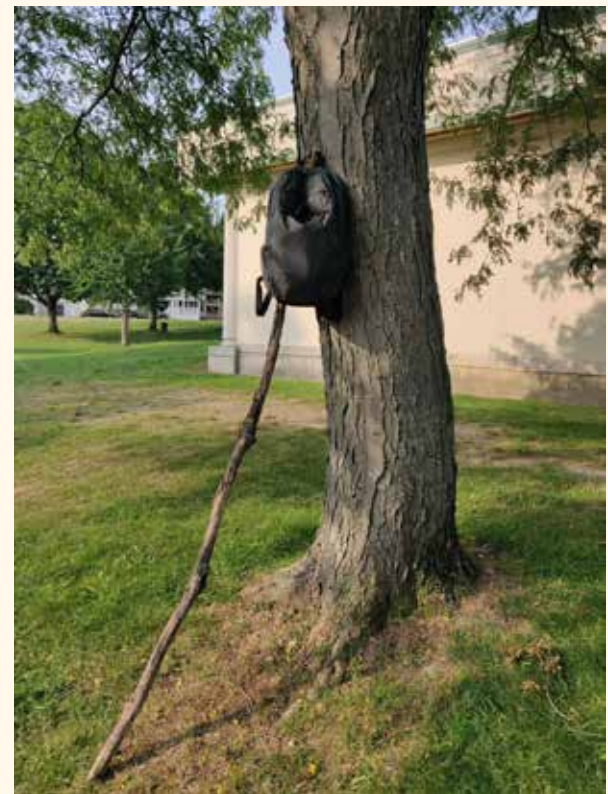
PRODUCTION

For producing TikTok videos, we did not need any additional equipment and either filmed outside in a local park or our apartments. Starting in week two of our project, we released three TikTok videos a week: Isabelle's videos on Mondays, Avery's on Wednesdays, and Maureen's on Fridays. Typically, we drafted our scripts a few days beforehand and filmed and edited the video on our respective upload days.



FIGURE A.4: AVERY RECORDING VOICEOVER IN THE GLOBAL LAB

We used The Global Lab, a recording studio on the WPI campus, to record voiceovers for our audio experience. After completing a 30-minute training on recording and editing audio in the space, we started recording in the sixth week. Isabelle finished editing the audio landscape in week seven. To accompany our recorded interviews and narration, we purchased a prairie sound pack by Gordon Hempton from Boom Library to embody the feeling of the prairie in South Dakota.



**FIGURE A.3:
IMPROVISED TRIPOD
FOR FILMING**

POST-PRODUCTION

We edited TikTok videos in the app and published directly to the platform upon completion. We also downloaded and saved the videos as MP4 and MOV files. They are uploaded to the WPI student project library and YouTube.

Isabelle edited the audio landscape using Reaper, which is licensed by WPI. The audio landscape is published with this report in the WPI student project library and Spotify under podcasts.

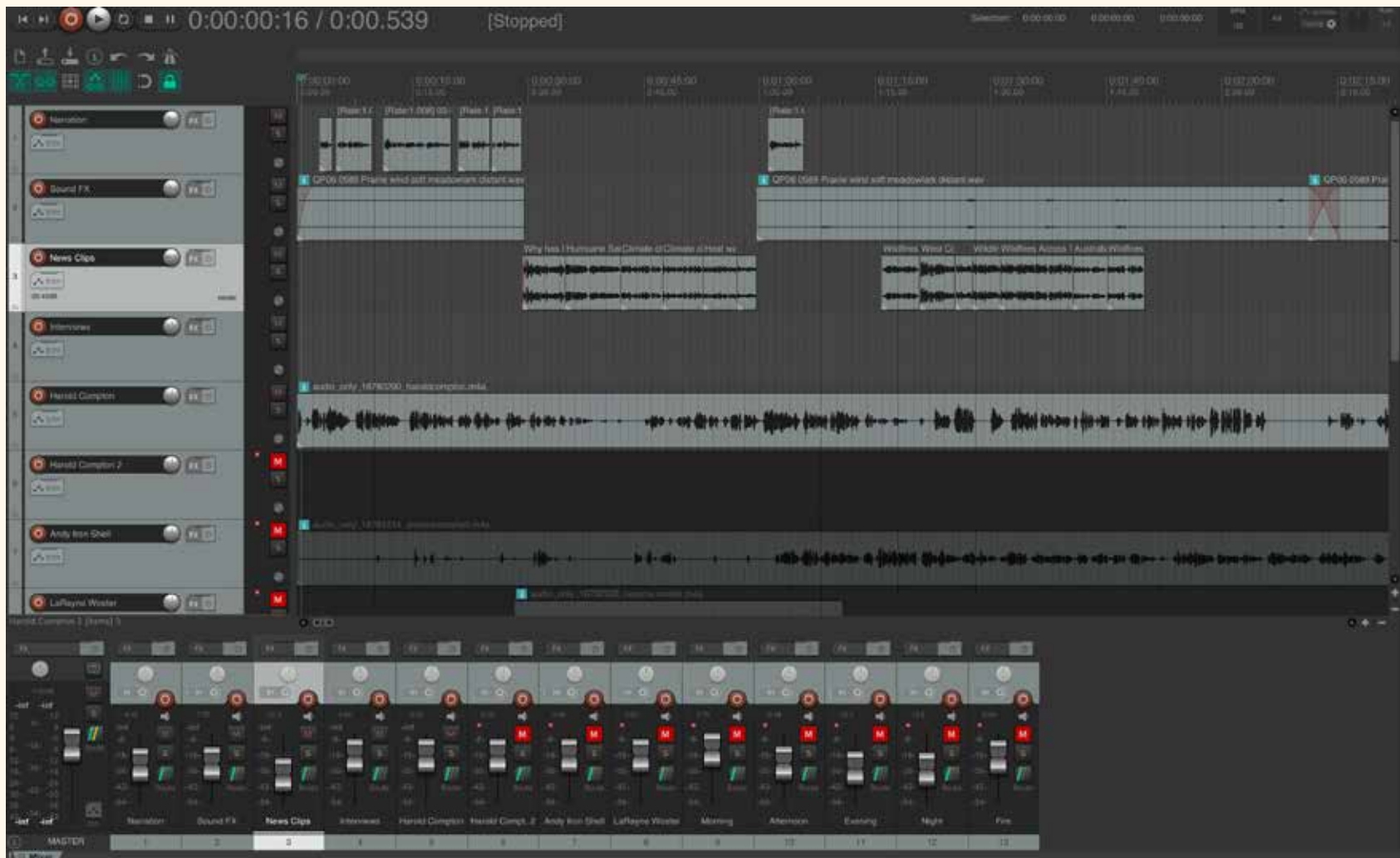


FIGURE A.5: SCREENCAP OF REAPER

APPENDIX B:

TIKTOK SCRIPTS

MONDAY (9/7/20) - INTRODUCTION

Hey there! I'm Isabelle, I'm Avery, I'm Maureen, and we're university students doing a seven week long project to learn how our culture can mitigate the climate crisis through the teachings of the Lakota tradition.

We want to respectfully study the history, philosophy, lifestyle, and ceremonies of the Lakota people. We'll interview elders, museum directors, and practitioners, and document our journey on TikTok.

Initially we were going to live on the Rosebud Reservation in South Dakota, but unfortunately, due to COVID-19, we are doing our project online.

We don't want to speak over indigneous voices, but instead amplify them. With the help and blessing of the Lakota people, we hope to present ways to find a new respect for life, relationships, and mother earth.

Follow along on our journey. Wopila Pilamaya.

Link to video: <https://youtu.be/luJMzTQqVV8>

WEDNESDAY (9/9/20) - WHO ARE THE LAKOTA?

So we've been learning about the Lakota people of the midwest plains and have some cool information to share with you

In the book, Zuya, Albert White Hat states, Lakota means 'acknowledging a relative'. He goes on to say that Lakota is not bound by race but instead by walking the road of ceremony and acceptance of the interconnectedness of the world

We learned that the root word for ceremony, cere, means sacred. Sacred is defined as something worthy of respect and awe. The Lakota believe that all things are relatives, so everything is worthy of that respect. When we study the climate crisis, this plays a big part, as not everyone respects nature in the same way. The next time it rains, think about that rain as your relative.

Mitakuye Oyasin

Link to video: <https://youtu.be/sHtqZ6YhFFw>

FRIDAY (9/11/20) - MITAKUYE OYASIN

The first Lakota phrase we learned was Mitakuye Oyasin [show spelling and pronunciation on screen], which is a phrase that's used often in the Lakota language and is a philosophy of life.

It means "we are all related" and comes from a fundamental belief in the Lakota philosophy that we are related to everything on earth and in the universe.

There's an idea that everything has a spirit: the earth, the sky, the trees, the mountains, everything.

So, when people say "Mitakuye Oyasin", they are acknowledging the interconnectedness of everything.

It is important for us to understand how the Lakota people are living in and with nature, and how we can learn from it.

Link to video: <https://youtu.be/qLFvpOpgka0>

MONDAY (9/14/20) -

WHAT IS THE SIXTH EXTINCTION?

What is the 6th extinction?

There have been 5 mass extinctions on Earth so far, with the most recent one being Cretaceous-Paleogene Extinction, about 66 million years ago.

According to a 2014 study, current extinction rates are estimated to be 1,000 times higher than they would be if humans weren't around

So, why is this happening?

Humans have contributed to factors like climate change and the introduction of invasive species, which are leading to even more extinctions as animal habitats disappear or are disrupted by new species.

Extinctions are happening so rapidly, many species are going extinct before we can even identify them.

And, while we may never be able to recover what we've lost, we CAN slow down the loss of life.

Link to video: <https://youtu.be/U0u3EEs0ZC8>

WEDNESDAY (9/16) - DOMINANT CULTURE THINKING

We live in a culture of toys, specifically, 'the one with the most toys wins.'

But what does that mean?

On a large scale, one can think of this as the arms race between the Soviet Union and the United States in the cold war, to build the biggest, best, and most nuclear weapons. A race, to ensure mutual destruction.

But this race has been happening on a small scale for a long time in our own backyards.

The culture of toys has always been about who can get the nicest house and the nicest car and the nicest clothes.

And this model will ensure our mutual destruction with the heavy impact of resource usage on resource limited world.

Even though multiple studies have shown that happiness is not tied to material wealth, but instead through experience, we still engage in this culture, ... (display don't say: Ahuvia, A. C. (2002); Caprariello, P. A. & Reis, H. T. (2013); Carter, T. J. & Gilovich, T. (2012); DeLeire, T. & Kalil, A. (2010); Cohen, M. A. & Vandenberg M. P. (2008);)

...because we've always done it this way.

Link to video: <https://youtu.be/FFuONBB2X2g>

FRIDAY (9/18) - WHAT EACH OF THE CARDINAL DIRECTIONS MEAN

What each of the cardinal directions mean, from what we're being taught by elders:

When the Lakota people pray, they pray to each direction, which each have a special meaning and color associated with it, as seen on the medicine wheel.

First, we have West (Black)

The thunder beings here send thunder and rain

You pray towards this direction when you are looking for a place of introspection

Next, we have North (Red)

This direction brings the harsh cold winds of the winter season

When you are praying in this direction, you are learning to embrace discomfort

Then, there is East (Yellow)

This is the direction that the sun comes from, the beginning of a new day

When you pray facing east, you are asking for wisdom and understanding

Lastly, we have South (White)

They say that this is where your spirit first goes when you die

You look to the south when you're seeking wisdom from the spirits residing there

Link to video: <https://youtu.be/YjPTM2y9ivY>

MONDAY (9/21) -

WHAT DOES TIOSPAYE MEAN?

We have been learning that the Lakota people focus on relationship. With relationship comes understanding, kindness, compassion and peace.

So, the Lakota create tiospaye (Tee-OHsh-Pie-aye) which describes their family system...these extended family members can include people from all around, even birds, animals, plants, rocks, are all family.

According to what we have learned, the Lakota people believe that it is an honor to become part of such a family. It means you are loved and cared for and that you will love and care for others, and all things.

We would love for you to become a member of our tiospaye.

Link to video: <https://youtu.be/e4bWzdeINrY>

WEDNESDAY (9/23) - EXPERIENCING RELATIONSHIP

Our elders taught us about The Great Conversation. This is a time you have all experienced at sunrise or sunset when all of the birds are chirping. If you were in a wooded area, these animals would also chime in.

At this moment, all things are speaking to one another, rocks, plants, animals. As we've been taught, we humans used to be a part of this conversation, but through climate crisis, we've become separated.

Each of us can join in on this conversation again by re-establishing a relationship with nature.

[Video of me reaching out and touching said object]

"Good morning sun"

"Good morning tree"

"Good morning rock"

"Good morning grass"

"Thank you sky"

Now we are ready to start our day together. Mitakuye Oyasin

Link to video: <https://youtu.be/ajhtQTkRJ3s>

FRIDAY (9/25) - THE BLACK HILLS

Here's what they don't teach you in American History class:

This is most commonly known as Mount Rushmore [greenscreen of Mt. Rushmore]

But what you might not know is that The Black Hills, where Mount Rushmore is, had always been inhabited by Natives,

However, in the late 19th century, the US government took the Black Hills from the Lakota people and relocated them.

And when I say "took", I mean that the government saw and still sees land as something to be owned.

But the Lakota see the Black Hills as a relative...

And the government, who only saw the Black Hills as dirt and gold, blasted the faces of their presidents into the sacred rocks, leaving behind selfish behaviors, and destruction.

Link to video: <https://youtu.be/OfbrphNyz6o>

MONDAY (9/28) - LAND BACK

Let's talk about the land back movement.

While "Land back" sounds straight forward enough, this phrase encompasses a complicated and intergenerational web of ideas and movements. (4Rs Youth Movement)

Land back is about much more than land.

It is about Indigenous peoples confronting colonialism at the root. It's about fighting for the right to their relationship with the earth. (4Rs Youth Movement)

And, if you live in North America, you're on stolen land. You can start by researching whose land you're on. [greenscreen of native lands in North America]

Land reparations and Indigenous sovereignty will help reverse the climate crisis and ensure a future for our planet.

Link to video: <https://youtu.be/OQTY9cSKC5o>

WEDNESDAY (9/30 LATER DELAYED TO 10/2) - SEVEN GENERATIONS

We are being taught that Lakota people thought in terms of 7 generations.

That when they acted ... they considered ... "How will what I do today impact future generations?"

Now, in our culture of toys we want things, and we want them now.

Think about this, the tons of garbage we have buried. The millions of tons of unrenewable fuels we have used, the destroyed coral beds, the extinct animals....

These are the gifts we are handing future generations.

Is this the gift you would give your mother ... or your grandchild?

Link to video: <https://youtu.be/btcyL52nfy8>

FRIDAY (10/2) -

MASCULINE AND FEMININE TONES

We've learned that the sacred pipe, the cannunpa (cha-NOON-pah) is used to pray and build relationship with all things.

The stem represents the masculine tones like assertiveness, competition, and strength.

And the bowl represents the feminine tones like compassion, kindness, and relationship.

When put together, the pipe reminds the person to live in balance in terms of masculine and feminine.

We believe it is important to learn about both tones, as this understanding and practice will then be carried forward to how we treat Maka Ina (Ma-KAH EE-NAH) or Mother Earth.

Then, we can be assertive in our compassion for her long time health.

Link to video: <https://youtu.be/JHXH7VmBFs4>

MONDAY (10/5) - THE MEDICINE WHEEL

Through our studies, elders have taught us that the medicine wheel is a sacred symbol in Lakota culture.

The circle represents the Earth's sacred outer boundary, often referred to as the Sun Dance Circle or the Sacred Hoop. It means the continuous pattern of life and death.

The horizontal and vertical lines represent the sun and man's sacred paths, respectively; the crossing of the two lines indicates the Earth's center, where one stands when praying.

The eagle feather is a sign of Wakan Tanka's - the Great Spirit's - power over everything.

Link to video: <https://youtu.be/ieQiu6esqCI>

WEDNESDAY (10/7) - CENTERED IN THE MEDICINE WHEEL

This is a Lakota medicine wheel [greenscreen of medicine wheel]

Our elders informed us that it tells many stories, some of which you saw in the last TikTok

In the center of the medicine wheel is YOU,

You stand in the middle of YOUR medicine wheel

In the center of the medicine wheel is me.

I stand in the middle of my medicine wheel.

I, we, have the power to destroy in the world or the power to create in the world.

The power to help The Mother (Maka Ina). Ma KAH. Ee-NAH.

We each have the power to help mitigate the climate crisis.

With our thoughts our wordsour actions.

From the Center of This Wheel.

Mitakuye Oyasin.

Link to video: <https://youtu.be/x2wek2aWo7M>

THURSDAY (10/8) - THE KAPEMNI

We learned that this Lakota symbol is called the kapemni, which literally translates to “twisting” [greenscreen of kapemni symbol]

It can be said to symbolize the Lakota’s relationship with the universe.

The kapemni is not two triangles, but two cones, like a DNA molecule, life itself.

If you look at the tipis the Lakota used to live in, it is the shape of a kapemni.

It has many meanings, like the top represents the stars or the spirit world, and the bottom represents the earth or this world

The kapemni shows the movement between these worlds. Everything that happens in the spirit world will happen in this world

As the Lakota say “As above, so below”

Link to video: https://youtu.be/w_40beAKc6w

APPENDIX C:

AUDIO LANDSCAPE SCRIPT

Avery: Welcome to the prairie of South Dakota, a land of rolling hills, moonscapes, and seas of grass that ebb and flow in the wind. The indigenous Dakota, Nakota, and Lakota people have a close relationship with the prairie and everything on it, having called it their home long before settlers arrived in the Americas. This prairie is a place of life: home to many plants, animals, and humans, and, like much of the world, is ultimately threatened by the climate crisis.

News Reporter 1: The worst flooding in decades has already affected more than 37 million people across China.

News Reporter 2: The storm hit the coast as a category 2 hurricane, packing sustained winds of more than 165 kilometers an hour.

News Reporter 3: A remarkable and alarming scene playing out in Venice, the worst flooding there in more than 50 years, the mayor declaring a state of emergency now for what he's calling the apocalyptic rising water there.

News Reporter 4: This heat wave is extraordinary. It's about as hot as it can physically get.

News Reporter 5: Death Valley topped 130 degrees.

Avery: The climate crisis can be felt in the community of the Rosebud Reservation in South Dakota.

Harold: My name is Harold Compton. I'm the chief operating officer for the Saint Francis Catholic mission in St Francis, South Dakota. I am 63 years old. I was born on the reservation here, the Rosebud Reservation. We have had more severe storms. Hail storms, hail storms have gotten worse. We've always had them in South Dakota. It's wild out here, wild weather. We've had those weather extremes.

We had 102 degrees on Saturday, and we had snow on Tuesday. It has gotten worse. We've had more flooding and, you know, is it a snapshot in time?

Isabelle, Avery, Maureen: Hi, I'm Isabelle, I'm Avery, and I'm Maureen.

Maureen: We're three undergraduate researchers at Worcester Polytechnic Institute. For the past three months we've been studying ways to mitigate the climate crisis through the teachings of the Lakota tradition.

Isabelle: We would like you to get to know some of the wonderful people we've met along the way. Meet LaRayne Woster.

LaRayne: Hello my relatives, my name is LaRayne. I am a citizen of the Sičhángŋu Oyáte, the Rosebud Tribe of South Dakota, and I am Lakota and I am a Native American studies Lakota language teacher at Saint Joseph's Indian School in Chamberlain, South Dakota. And my passion to teach is so that kids understand who they are and from where they come so that into the future they will continue to share culture, language, and help future generations.

Maureen: The effects of climate change are being felt at the St. Joseph's Indian School, in Chamberlain, South Dakota.

LaRayne: Plants and medicines are changing the way they are ripened. For example, chokecherries we used to pick late June, early July and I feel like that has moved later into July, maybe even into August. In South Dakota we have the Missouri River, which used to be much skinnier than it is now. What happened with widening the Missouri River took a lot of the plants, you know? Everything that grew along the River flooded. So what's left we have to find and use in the best way possible so that you make sure that you make sure you have it again the next year.

Maureen: Lakota people rely heavily on plants such as sage and sweetgrass for their ceremonies and medicine. Changes in the environment have reduced the abundance

of these plants.

LaRayne: For every illness there is a cure somewhere by a plant to help the illness that you have, whether it's a flower or a leaf or a root or stem or the powder that's made from it, or the pollen, that grandmother Earth is going to take care of us and, but we have to respect her. We have to take care of her in order for her to take care of us.

Avery: “We have to take care of her, in order for her to take care of us”. Lakota people hold a deep connection with the Earth. Lakota commonly use the phrase “Mitakuye Oyasin” which translates to ‘we are all related’. And when they say ‘we’ they mean everyone and everything, including the Earth, the sky, the stars, rocks, animals, and trees.

Isabelle: The Earth is their relative.

Maureen: The Earth is *our* relative.

Harold: We understood that we came from the stars, that the minerals, that the physical aspect of our bodies came from not just this earth, but from the sky and the stars and the plants you eat. So we grew from that. We are made of the earth and the sky. And that's why we're related to that, because without that we wouldn't exist the same way with water.

Maureen: Of those relationships, Lakota hold an extremely strong relationship with the bison, or buffalo, native to the prairie. Lakota people were dependent on the buffalo for much more than food.

Harold: In the past, we followed the Buffalo, they had taken care of us. If they needed minerals, they knew where to go, what plants to get, or what dirt to go, what areas of the Midwest to travel to get those, and we followed them around. They took care of us. Now we have a responsibility to take care of them.

And we're still learning that too, how to take care of our Buffalo. How to best live in a relationship with them where it is not the way it was before where we all roamed free. So we're still learning that. It's not an easy thing to do. We have partners, we have friends that are learning like us too. Institutions of higher learning: University of Nebraska, South Dakota State that have experience with Buffalo herds. National Park Service. So all of us interact and it creates bridges across cultures. Across the ranching industry, across the educational institutions. So it's a good thing the Buffalo create relationships for us outside of our own little families and tribes. That's also an optimistic thing when we talk about the sixth extinction.

Isabelle: In the lifespan of the Earth, there have been five major extinction events. Without changing our course on the climate crisis, we're headed right towards the sixth extinction, our extinction.

Andy: The extraction industry is the sickness that is starting to arise in our waters and in our land.

Maureen: Now meet Andy Iron Shell, a climate activist that has experience on the frontlines of the Keystone XL Pipeline protests.

Andy: I'm Andy Iron Shell. I've been with the NDN collective since early March. Previously, I had been with Thunder Valley Community Development Corporation on Pine Ridge.

Avery: Andy works as a community outreach specialist. He visits communities and uses his experience to engage members to discuss the effects of the climate crisis. He uses his support with NDN collective, an all-indigenous team of grassroots organizers, to enable communities to properly address the issues they face.

Andy: You know, we can't even grow food in some areas in the country now because of the chemicals that we put in to just grow corn for the cows or for ethanol. So we haven't really honored our respect for the land. A lot of our medicines that could

save us are now underwater or destroyed from hydroelectric plants and things like that. When those coal fire plants came on board in Wyoming, they killed a lot of the plants, the traditional medicines downstream here in South Dakota. The cause and effect of those coal fire plants and those hydroelectric dams that were put in really erased a lot of potential medicines that were growing here and flourishing here on this land and are in our region of the country.

Maureen: Cause and effect. A human cause, and a natural effect. Human carbon contributions to the atmosphere have been rapidly accelerating the natural greenhouse effect, resulting in accelerated global temperature increases.

News Reporter 6: Historic fires are ripping through three western states.

News Reporter 7: The fires have burned more than 620,000 acres of our beautiful state

News Reporter 8: As wildfires sweep the west, hazardous air conditions stretch far beyond the flames making air quality in Seattle, Portland, San Francisco, and Los Angeles some of the world's worst.

News Reporter 9: Many of the blazes are out of control and beyond anyone's experience.

News Reporter 10: Residents are literally choking on smoke as the flames draw closer.

Harold: It's so bad and it's so severe. The fires are so, so bad. You know we've had fire, but not like this. Once you're a firefighter, you're always a firefighter, but it's to a younger man's game. I did 35 years and about 30 of that was involved in firefighting of some type. When it comes to the big fires, it's real. Historically and obviously and spiritually. The Sioux were well known for using fire as a management tool. They would go into the Black Hills in the Fall and do burns. And because then in the Spring, they would know where the Buffalo would go back when it was green. We use fire as a tool all the time.

Isabelle: We are currently experiencing the effects of the climate crisis, and we're

not doing much about it. But some Lakota activists are trying to change that.

Andy: We're in this movement now across the United States and Indian country and Indigenous communities about this conversation about Land Back. You know, what do we want at the end of the day? It is Land Back. We don't want reparations, or you know different processes to perpetuate white supremacy. We want our land back. Taking back public lands and federal lands, especially here in the Black Hills of South Dakota.

Isabelle: Land Back refers to restoring land ownership back to the indigenous people who resided there before settlers arrived.

Harold: The contemporary struggle we have, buying land back in the Black Hills. As one of my friends says, we're doing the honorable thing and buying the Black Hills back. It scares people when we start buying our land back, but this is America and we can buy it back if we got the money.

Maureen: Andy believes that the land back movement plays a large part in the climate crisis.

Andy: And once we have that, then we could set an example of: how do you build regenerative communities like we did at Thunder Valley?

Maureen: Thunder Valley is a community on the Pine Ridge Reservation where Andy worked for the Community Development Corporation to build sustainable housing following seven generational thinking. What they built should last for at least seven generations.

Andy: How do you make that more of the normal than the exception, right? Because it was such a grand idea that we put together in the epicenter of poverty. And so the work that happened at Thunder Valley was a process to show all people that these things can be done, especially in poor communities like the economic situation

on Pine Ridge. And if it could happen there, it could happen anywhere.

Avery: The homes in Thunder Valley are powered by renewable energy because scientists predict that if used at current rates, our crude oil supply will run out by the latter half of the century.

Isabelle: That's only two generations away.

Andy: You know, people romanticize about Indian Country being these stewards for Mother Earth, when all human beings should be stewards for Mother Earth you know. So we market that, "Oh maybe the Indian should save us" when really we should all collectively have that responsibility of informing ourselves and being proactive against these institutions and these systems that perpetuate all the things that create climate change. And that's the mindset we need to build critical mass of people that think like how we do, like that there is the possibility of change. There is the possibility that we can keep from destroying humanity. The planet is not dying. You know, the planet is going to be here long after us, just like it was here long before us. But humanity is at a critical point in our existence that if we don't change the way we think about everything, if we don't become more compassionate as human beings to one another, that we're gonna doom ourselves. We're gonna doom our future generations. They're the ones that are going to be fighting over just a glass of water. Or you know, clean air and all these things they need to survive and that time is not that far off. And the politics perpetuate that and so you know, how do we even educate the good politicians among us to understand these things and start to not just trying to get reelected, but how do you change things? And it has to be done in a way where it's a movement by all, not just a select few.

Andy: We have to have these conversations. If we're gonna talk about really changing the things we need to change to address the climate right? We don't have a lot of time. And you know we're playing catchup already.

Harold: There's no Planet B. You know we are all on this one rock together. It

to treat each other with respect because we are all related.

LaRayne: Understand, you know it's our belief that we are part of the Earth. We don't own the earth, we're to take care of her, she is to take care of us.

Andy: We're all in this together and that we all have a role to address on climate change and in the different social issues that we have in this country and on this planet.

Avery: This concludes the end of our journey through the prairie, but our journey to prevent the climate crisis and sixth extinction is far from over. We give thanks to our professors who gave us this wonderful opportunity and helped us along the way: Professors Balistreri, Peet, Dodson, and more. We give thanks to everyone we spoke with: Amelia and Chris Cenotti, and Andrew Bentley. We give special thanks to the speakers in this audio experience: Harold Compton, LaRayne Woster, and Andy Iron Shell. We thank you for joining us. And lastly, we thank the Mother, without whom none of us would be here. We are all related. Mitakuye Oyasin.

APPENDIX D:

INFORMED CONSENT FORM AND PROTOCOL FOR VIDEOTAPING

Title of IQP Project: *Mitigating the Climate Crisis Through Lakota Teachings*

Team Members: Isabelle Cordova (imcordova@wpi.edu), Avery Smith (ajsmith2@wpi.edu), Maureen Ye (mlye@wpi.edu)

Sponsor: Dr. Thomas Balistreri (tjbalistreri@wpi.edu)

Introduction: You are being asked to participate in a research study. Before you agree, however, we would like to inform you about the purpose of the project, the procedures to be followed, and any benefits, risks or discomfort that you may experience as a result of your participation. This form presents information about the project so that you may make a fully informed decision regarding your participation.

The goal or purpose of the project: The goal of our project is to introduce an alternative narrative; alternative ways of engaging with and living in nature in an effort to mitigate climate change and the sixth extinction. Our alternative narrative will be grounded in the wisdom, ceremonies, beliefs, and behaviors of the Lakota people.

Procedures to be followed: We will record video and audio during an interview with you, in which we will ask you questions regarding the history, stories, beliefs, practices and ceremonies of the Lakota people.

Risks to participants: If you consent to having your name and/or face released to the public this may pose a risk if you prefer personal privacy.

Benefits to research participants and others: There are no personal benefits for the research participants.

Record keeping and confidentiality: Records of the video and audio collected from this interview will be accessible by study investigators. Confidential information will not be released to the public. The video and audio collected from this interview will be edited and made public on the internet. You have a right to review any statements you make before they are published. Records of your participation in this study will be held confidential so far as permitted by law. However, the study investigators, the sponsor or its designee and, under certain circumstances, the Worcester Polytechnic Institute Institutional Review Board (WPI IRB) will be able to inspect and have access to confidential data that identify you by name. Any publication or presentation of the data will not identify you.

For more information about this research or about the rights of research participants, or in case of research-related injury, contact: any of the above team members, sponsor, or Institutional Research Board members below.

IRB Manager
Ruth McKeogh,
Tel. 508 831-6699,
Email: irb@wpi.edu

Human Protection Administrator
Gabriel Johnson,
Tel. 508-831-4989,
Email: gjohnson@wpi.edu

Your participation in this research is voluntary. Your refusal to participate will not result in any penalty to you or any loss of benefits to which you may otherwise be entitled. You may decide to stop participating in the research at any time without penalty or loss of other benefits. The project investigators retain the right to cancel

or postpone the experimental procedures at any time they see fit.

By signing below, you acknowledge that you have been informed about and consent to be a participant in the study described above. Make sure that your questions are answered to your satisfaction before signing. You are entitled to retain a copy of this consent agreement.

_____ Date: _____
Study Participant Signature

Study Participant Name (Please print)

_____ Date: _____
Signature of Person who explained this study

APPENDIX E:

SEMI-STRUCTURED

INTERVIEW QUESTIONS

Semi-Structured Interview Questions: To be conducted with museum directors at two Lakota Museums, with Lakota elders, and with two WPI alumni who have been practicing Lakota tradition and ceremony with the blessing of the Lakota people of the Rosebud Reservation in South Dakota. Interviews will be conducted via Zoom or by phone.

Context Statement

‘Scientists are in agreement that currently the world is experiencing a climate crisis and entering a sixth extinction. It has come to our attention that the Lakota people lived in relationship with nature. Through this interview we hope to create a better understanding of that relationship, the philosophy, and way of life of the Lakota people prior to invasion by colonialists. We wish to get a better understanding of ceremony and how those ceremonies assist the Lakota people in maintaining their relationship with nature and all their relations. We surely don’t intend to appropriate Lakota tradition, but we would appreciate also gathering insight into what the dominant culture MUST do differently if it is to mitigate the climate crisis and sixth extinction.’

Semi-Structured Interview Questions

1. We understand the sacred pipe is made up of two pieces, the stem and the bowl, that represent the feminine and masculine. Please tell us more about that and why that understanding is important in terms of life and relationship with nature and all things.
2. We understand the medicine wheel is an important symbol in Lakota tradition.

Please tell us more about that and why that understanding is important in terms of life and relationship to nature.

3. We understand there is a ceremony called inipi or initi. That it is a cleaning of one's spirit, mind and body. Please tell us how that ceremony is important to the people in terms of your relationship with nature.

4. What three things do you believe the dominant culture can learn from the Lakota people, and practice, if they are to mitigate the climate crisis and the sixth extinction?

5. How have the Lakota people been affected by climate change?

6. What do you think has to be done differently by the dominant culture?

7. What else is important for us to know that we didn't ask about?