INDIGENOUS WAYS OF KNOWING, DIGITAL STORYTELLING, AND
ENVIRONMENTAL LEARNING — A CONFLUENCE OF TRADITION AND NEW
MEDIA TECHNOLOGY

A Dissertation

Presented to the Faculty of the Graduate School

of Cornell University

In Partial Fulfillment of the Requirements for the Degree of

Doctor of Philosophy

by

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February 2016

Abstract

INDIGENOUS WAYS OF KNOWING, DIGITAL STORYTELLING, AND
ENVIRONMENTAL LEARNING — A CONFLUENCE OF TRADITION AND NEW
MEDIA TECHNOLOGY

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Cornell University 2016

This study investigates experiences and perspectives of participants in three
nonformal environmental education programs that utilized a combination of digital
storytelling and Indigenous ways of knowing, and where the author was a primary
instructor and mentor. The research was conducted with Green Guerrillas Youth Media
Tech Collective, Ithaca NY (9 participants, 2006 - 2011); Emerging Indigenous Leaders
Institute, Pyramid Lake Paiute Reservation (6 participants, 2008 - 2013); and Early
Childhood Learning Center, Seneca Nation Cattaraugus Territory (8 participants, 2014).
Indigenous research methods, narrative inquiry, and grounded theory were used to guide
the study. Stories about participants' experiences were gathered through interviews,
participant observation, visual narrative analysis of digital stories, and autoethnography
conducted in 2014-2015. They were woven together to create a polyvocal narrative
speaking to the research questions. Digital storytelling was found to foster engagement
with environmental learning, as well as providing means for direct nature contact.
Indigenous and non-Indigenous young people of color responded favorably to a learning
environment grounded in Indigenous ways of knowing. Participants retained significant
memories of a sense of empowerment, as well as development and reinforcement of

critical environmental literacies, identities, and ethics, as meaningful individual and collective experiences. Aesthetics of nature and food were expressed as important aspects of participants' environmental learning. The findings suggest that combined digital storytelling and Indigenous pedagogies should continue to be implemented and researched as an effective means of engaging student interest and promoting environmental education goals, particularly with urban Indigenous and non-Indigenous youth.

Biographical Sketch

Jason N. Corwin received his M.S. in Natural Resources in 2010 and his B.S. in Communications in 2002 from Cornell University College of Agriculture and Life Sciences. He is currently the executive director of the Seneca Media and Communications Center for the Seneca Nation of Indians.

Jason is the co-founder of Southern Tier Advocacy and Mitigation Project, Inc., in Ithaca, NY. He served as the co-coordinator of its flagship program, Green Guerrillas Youth Media Tech Collective, from 2006 to 2011. Since 2008 he has been a visiting faculty member of the Emerging Indigenous Leadership Institute (EILI) based at the Pyramid Lake Paiute Reservation in Nevada. Beginning in 1995 he has produced several TV programs, radio shows, documentaries, and music videos. He is a lifelong photographer, outdoors enthusiast, and a certified Wilderness Skills Instructor.

His primary scholarly interests are in the integration of environmental education and the humanities, particularly the creative media arts of photography, music, and video production, as well as Indigenous environmental knowledge, practices, and decolonization. He has been a guest lecturer at many colleges and universities and has presented at academic conferences on the topics of Indigenous ways of knowing, digital storytelling, social justice, environmental education, sustainability, and environmental justice.

Acknowledgements

First and foremost I want to say nya:wëh (thanks) to all the participants in this study. Without you this would not have been possible. The Green Guerrillas Youth Media Tech Collective participants were some of the most inspiring people I have been fortunate to work with. Leslie Jones had a powerful vision for the group, as well as the intelligence, skills, and tenacity to make it happen. I'm honored to have had her as a co-founder and co-facilitator. The other adult volunteers gave of themselves generously to help make the program excellent. Che Broadnax, Alan Gomez, Belisa Gonzalez, Sylvia "Skunk," and Kyrie Ransom, I am forever thankful for your commitment to the group. Many other community members too numerous to mention made valuable material and energetic contributions. To all the youth members, not just the ones who participated in this study, I have always been inspired by your intelligence, creativity, and willingness to think outside the box and "connect the dots." Every one of you made worthwhile the hard work necessary to keep the program going. I also must thank all the board members of our organization, who did the behind-the-scenes work that allowed our program to grow and flourish: the late Maggie Goldsmith, Ulises Mejias, Alan Mittman, Troy Richardson, Joe Soto, and Andre Williams — your support for bringing a new approach to social and environmental justice and youth empowerment for the Ithaca area was invaluable.

To the students and staff of the Emerging Indigenous Leaders Institute: I have been honored and blessed to be so well received by you whenever I come to give my workshops. Dr. Debra Harry, you are a scholar, educator, and leader of the highest caliber

who inspires me greatly to revitalize Indigenous ways of knowing and challenge the legacy of colonialism.

To the students and staff, especially Lead Teacher Dee Dee Parker, of the Cattaraugus Early Childhood Learning Center After School 3 classroom, I am thankful that you welcomed me and made me feel at home working together. Gardening does grow on us! I am also grateful to Chad Nephew for helping to facilitate the project. Richie Big Kettle was a great teacher and friend throughout the whole process.

Prof. Alan Gomez and soon-to-be-Dr. Sheena Sood have been great friends, intellectual comrades, and truly ones who I can call brother and sister. I am very thankful for your time and shared insights serving as peer debriefing readers for my findings chapters. Akiima Price has been a wonderful fellow traveler in the realms of environmental education, ensuring that marginalized communities have opportunities for connecting to nature, as well as critically analyzing and responding to environmental issues. Your encouragement to me to share with the world my insights into the field has been appreciated. I also want to thank the members of my cohort from Prof. Krasny's group, the members of the Indigenous Graduate Student Association, and all of the students, faculty, and staff I worked with from the Department of Natural Resources and the American Indian Program. You provided me with intellectual, logistical, and physical resources that contributed to my development as a scholar and educator in many ways.

I have been fortunate to have a deeply committed committee that guided me through this arduous process. My chair, Prof. Marianne Krasny, exposed me to many schools of thought while providing a variety of opportunities to facilitate my entry into the professional realm of environmental education. Her openness and commitment to new

ideas are inspiring, and her contribution to the creation of a vibrant field of environmental education that is reflective of all peoples is refreshing. Prof. Troy Richardson has been a friend for over 20 years, so I was thankful when he came to Cornell to teach. He has provided untold intellectual stimulation and down-to-earth advice about navigating the complexities of academia. Our coffee-fueled discussions about every imaginable subject from the mundane to the abstract and philosophical have been richly rewarding. His family has always made me feel at home when I visit. Prof. Jolene Rickard has pushed me to strive for excellence and critical thinking in a special way that only she can. Her artistic and academic work has been inspiring to me and encouraged me to see myself as not just an activist filmmaker, photographer, and educator but also an artist. Prof. Scott Peters was the first person to expose me to the field of narrative inquiry. He pushed me to always go deeper to find the stories of lived experience and explore them. His admonitions to sharpen the focus of this study are greatly appreciated, as due to my deep personal investment in all of the research sites, I often wanted to incorporate every possible facet. Were it not for his insistence to home in on a manageable set of research questions, I might never have completed this dissertation. Taken together, I have been very fortunate to have worked with all of you who comprised this committee.

My deepest gratitude goes to my family for being so supportive throughout this long journey and encouraging me to stay the course. Maria, Leonard, and Marissa Corwin, you are the best family a person could ask for. From home-cooked meals to supportive phone calls to the editing of this dissertation, you've always had my back, and I love you so much. To my spiritual brothers, Jomo Alakoye-Simmons and Joe Soto, I am truly blessed to have had your love and support. Our long and extensive conversations helped

me to stay grounded, as well as to remember who I am as an Indigenous man and why I

was pursuing this work.

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Chapter 1. Introduction

Background

I am part of a growing number of environmental educators who are utilizing media technology to engage students who are growing up in a digital age. My research at Cornell has focused on the intersection of Indigenous[1] ways of knowing and digital storytelling in nonformal environmental learning contexts. My three research sites are Green Guerrillas Youth Media Tech Collective in Ithaca, an organization I co-founded and facilitated for five years; the Emerging Indigenous Leaders Institute in Nevada, where I have been a visiting faculty member since 2008, teaching a capstone workshop on digital storytelling; and the Seneca Nation's Early Childhood Learning Center on the Cattaraugus reservation, where I led an after-school and summer program media and garden-based learning project in 2014. I utilize a combination of participatory ethnography, narrative inquiry, and autoethnography, through an overarching Indigenous research methodologies approach, to examine the dynamics of these learning environments as expressed in the stories told by the students and staff, as well as myself as a lead educator, at all three research sites. Central to this study is exploring how the pedagogy I have developed, which is informed by Indigenous ways of knowing and utilizes digital media, fosters environmental learning.

In an upstate New York college town surrounded by maximum-security prisons and juvenile penal institutions, where lines of race and class are quite explicit, and life outcomes for young people of color often involve limited education and employment

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[1] I consider "Indigenous" in "Indigenous people" to be a proper adjective, as in "African people." Some of the authors cited here follow this capitalization and some do not. Quotations with this word will be kept in

possibilities, as well as criminalization and incarceration, a small group of teenagers of color (mostly African-American, but also Chinese-American, Mexican-American, and Mohawk) gathered in a basement after school and on weekends. Working with the guidance of a small group of adult volunteer mentors and calling themselves Green Guerrillas Youth Media Tech Collective, they watched narrative and documentary movies and music videos, and analyzed a wide variety of printed and online materials on subjects as diverse as environmental and social justice, sexism, colonialism, Indigenous ways of knowing, and sustainability. Armed and empowered with a critical consciousness of the intersections of political power, economics, social structures, nature, and culture, they called themselves "storytellers who challenge the status quo" and crafted videos using the latest in digital media technology, which they distributed on DVDs and via their YouTube channel. Through extensive community outreach activities they became well known for promoting environmental responsibility and social equity while opposing pollution and prisons.

On the other side of the continent, in the Great Basin region of Nevada, a group of Indigenous young adults from the Paiute, Washoe, and Shoshone nations gathered once a month for an intensive training process facilitated by the Emerging Indigenous Leaders Institute. Through interactions with elders, community leaders, and a wide array of Indigenous activists from throughout North America, these prospective leaders engaged with a wide variety of topics, from healing and decolonization (e.g., from the experiences of boarding schools, genocidal wars, and oppressive government policies) to language, traditional foods, and international advocacy (e.g., participation in the United Nations Permanent Forum on Indigenous Issues). For their capstone workshop and project they

each produced a short video informed by their experiences in the program. On their day of graduation from the program, family members and friends gathered to see them receive their certificates of completion and watch a screening of their videos.

Back east, a group of Haudenosaunee (also known as the Six Nations and Iroquois) students from the Seneca Nation aged 8 to 12 at the Cattaraugus Early Childhood Learning Center grew a Three Sisters garden (corn, beans, and squash planted in the traditional intercropping method). They used a combination of still cameras, "flip" HD video cameras, and iPads to document their learning experience. During the height of the harvest season they created a digital "microdocumentary" story that premiered at the Seneca Nation Fall Festival, where the fruits of their labor won several first-place ribbons in the agricultural competition.

What these three sites share in common, in addition to a conscious engagement with Indigenous ways of knowing and digital media narrative production, is that I was the curriculum developer and facilitator of both the media production training and the portions dealing with Indigenous knowledge and the environment.[2] I brought to this work my background as a filmmaker, youth activist, and Onöndowa′ga:′ (more commonly known as Seneca), along with a longstanding interest in environmental issues, outdoor education, and sustainability. As a participatory researcher I developed and conducted the studies that form the body of this dissertation in partnership with the participants. Utilizing a research framework of narrative inquiry methodology and an Indigenous learning model, we set out to examine together the stories we could tell about the

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[2] Except for the Emerging Indigenous Leaders Institute, where my work was focused on digital storytelling. Other faculty taught the course modules focused on environmental issues and Indigenous knowledge.

intersection of digital video and environmental learning through the lens of culturally

relevant environmental education. This is our collective story.

Researcher Background and Involvement

I have a deep passion for the visual arts of photography and videography, as well

as a desire to help people connect with nature and develop sustainable ways of living

through unique and engaging learning opportunities, coupled with a strong desire to work

on the injustices that I perceive in communities of color, particularly Indigenous ones.

Since 2006, I have been involved with the aforementioned community organizations or

institutions on projects utilizing digital media-based narrative creation to promote the

goals of environmental literacy and ethics, social justice, cultural vitality, and

decolonization, utilizing frameworks of Indigenous ways of knowing and positive youth

development. I believe that empowering young people in ways to be both critical viewers

of media and media producers themselves, within an environmentally focused and

culturally grounded learning community, provides a powerful means for fostering an

ethical ecological identity. By utilizing these media tools as a vehicle for increased

learning and interaction with the environment and their own culture, students become

active creators rather than passive consumers of electronic media and knowledge. In my

experience, digital media is a means of creative expression that provides opportunities for

engaged and sustained learning about the environment when it is situated within a

pedagogy that draws from Indigenous ways of knowing, both philosophically and in its

practices. I have observed that when students are given the opportunity to explore

environmental topics in a context where they experience positive mentoring relationships

and hands-on learning, they benefit significantly in their levels of environmental

awareness, ethics, and sense of personal empowerment. As I am an embedded and participatory action researcher, my own subjectivity is very pertinent to this dissertation. I do not make claims to objectivity, only my own willingness to look honestly and openly at the perspectives generated through this study, both of myself and the other participants who are sharing their stories and experiences.

Two sets of experiences profoundly influenced my decisions in becoming an environmental and media educator. As a child I attended a summer camp for Native children from the New Haven, CT area that my mother was instrumental in organizing. At a nature center just outside the city we learned about Native culture, nature, and how they intertwined under the instruction of elders and community members, most of whom were from the Indigenous peoples of the New England region. In addition to learning songs and craft skills such as splint basketry and beadwork, some of my fondest memories were of learning how to make arrowheads and about the uses of different plants and trees. Ever since then I have been drawn to outdoor activities such as hiking, camping, and hunting, and so-called primitive skills such as fire-making and shelter construction using natural materials.

The second set of experiences occurred as an adolescent and in my early 20s as I became increasingly aware of the injustices in the world toward people, particularly Indigenous communities, and the environment. While in high school I became involved with activists connected to the American Indian Movement (AIM) and focused especially on the case of AIM political prisoner Leonard Peltier, as well as the situation of traditional Diné (Navajo) elders from the Big Mountain region, who were being forced off their lands to make way for the world's largest coal strip mine. Through this work I

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was introduced to activist media and documentary videography, as well as other social movements, particularly those working on the release of political prisoners in North America. In 1995 I reconnected with my childhood interest in photography and translated those skills to the video camera.

This work eventually led me to earn a BS in communications at Cornell University and to develop as an independent media maker and co-founder of a nonprofit community organization in Ithaca, NY, whose flagship program was called Green Guerillas Youth Media Tech Collective. This unique job-training program for "at-risk" youth of color seemed to have positive and sometimes dramatic impacts on the youth participants, other youth organizations, and the adult volunteers, judging from the feedback from participants, adult mentors, and other youth organizers as documented in my master's thesis (Corwin, 2010). This further cemented my sense of passion and purpose in combining youth-produced digital media production, environmental learning, and the general resurgence of Indigenous ways of knowing that has been growing rapidly in the past few decades.

In Chapter 3, Methodology, I will discuss my subjectivity more thoroughly in order to grapple with the issues of bias, reflexivity, representation and "voice" through an autobiographical exposition. As a participatory researcher who is investigating research sites in which I have played a key role as an educator, my own narratives in addition to quotes from research participants will be woven together throughout this dissertation.

The Research Sites

From 2007 to 2009 I conducted the research with the Green Guerillas Youth Media Tech Collective that served as the basis for my master's thesis *Multicultural*

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Multimedia Learning for Sustainability: A Narrative Case Study of Green Guerrillas Youth Media Tech Collective (Corwin, 2010). This was initially a summer program that grew to a year-round after-school endeavor and that produced four feature-length movies and a number of short videos. I continued to keep journals and field notes about the program until it ended in 2011, and maintained close communication and relationships with many of the participants. I originally intended to focus my doctoral research on a pedagogical practice of the group called *Ecocinema* that sought to foster ecological literacy and connection with nature through nature photography and cinematography. This research project then evolved into an examination of broader issues, for which the alumni of the Green Guerrillas (GGs hereafter) would be one of the groups of research participants. I met with a selected sample of them between January and September 2014, both as a group and in pairs, to develop the interview questions and record interviews.

From 2008 to the present I have been a visiting faculty member for the Emerging Indigenous Leaders Institute (EILI hereafter), located on the Pyramid Lake Paiute Reservation in Nevada, which serves young adults from the Paiute, Washoe, and Shoshone nations of the local Great Basin region. For each yearly cohort I teach a capstone workshop on digital storytelling, in which each student creates a short video about an aspect of his or her community or personal life in relation to what they have experienced and learned in the program. As I was developing my ideas for my doctoral research proposal it became apparent to me that this was another valuable research site. While EILI is not explicitly an environmental education program, it does incorporate many environmentally related topics such as healthy and traditional foods, genetics and "biocolonialism" issues, and protection of traditional homelands and lifeways. When I

presented my proposal to the director of EILI, Dr. Debra Harry, she was excited about the opportunity to collaborate on research that would be of benefit to the program's own needs for an in-depth analysis of its impacts on students. She and I agreed on a set of interview questions together and I started interviewing EILI alumni by email in March of 2015 while simultaneously developing narrative analyses of the digital stories they created in the program.

My initial proposal for my master's thesis research in 2006 had involved an investigation of the development of renewable energy on the territories of the Seneca Nation of Indians. However, due to a series of logistical problems, that plan became untenable and my committee chair at that time graciously let me shift to focusing my research on my concurrent environmental education activities with the GGs. Later, as my doctoral research proposal was developing around the GGs and EILI groups, my current chair suggested that I work with one more research site with a currently operating and explicitly environmental education program. In early 2013 the Seneca Nation of Indians, in conjunction with the Seneca Diabetes Foundation, a nonprofit organization, initiated a program called Food Is Our Medicine (FIOM). This ongoing program has the objective of promoting healthy eating to address an epidemic of diabetes, obesity, and other diet-related health issues affecting the people of the Nation. I began volunteering at the FIOM garden at the Cattaraugus Community Center in the summer of 2013 in order to begin to understand who the various players are in the local community food and gardening activities and to see if I could develop an environmental education program centered on gardening.

At the Nation's Cattaraugus Territory, the Early Childhood Learning Center (ECLC), which offers Head Start, daycare, and after-school programs, has embraced gardening as an integral part of their curriculum. Each classroom has a raised-bed garden outside their window where they cultivate a variety of traditional and other plant foods. They have showcased the results of their work in a float during the Seneca Nation Fall Festival parade and entered their finest produce in the festival's agricultural competition, winning several ribbons. In the fall of 2013 I worked with Chad Nephew, the ECLC after-school program coordinator at the time, in developing a digital storytelling project for 8- to 12-year-olds. All of the students are Indigenous, and the project focused on their gardening activities and Haudenosaunee agricultural traditions.

Beginning in March of 2014, I worked with students in the ECLC After School 3 classroom (the oldest of the three classes) one day per week doing a variety of activities including testing white corn seed for germination, practicing camera skills, working on a simple digital slide show about their gardening activities from the previous year, and planting a 20 by 40 foot Three Sisters (corn, beans, and squash) garden, something they had not done before. At the end of the school year the ECLC after-school program becomes a summer camp, and I was able to spend more time with the students working on the garden and further developing their digital media skills. I taught them how to use the ECLC's recently acquired iPads, as well as other digital still and video cameras already present in the classroom and that I provided. With the assistance and guidance of a volunteer community member who is an experienced farmer, I taught them how to grow the Three Sisters using the traditional mounding technique. We edited a digital story about their experience, using Seneca language and songs to accompany an

extensive collection of stills and video footage the students had taken. *Dewënödë:nö:de:'*

Jöhehgöh (The Three Sisters, Those Who Sustain Us) was premiered to a receptive

audience at the Seneca Nation Fall Festival in September of 2013.

Definitions of Key Concepts and Terms

Digital Storytelling

I use the term "digital storytelling" in these contexts to refer to a process whereby

students create short videos connected to their work in their respective programs. The

digital media used are photography, sound recording, collected still images, and

videography. While some of these media productions do not exactly fit the strict

definition of digital storytelling offered by Lambert (2006) and come closer to being

traditional short documentaries, I feel there are enough correspondences for this to be the

most accurate term. In this process, group discussions about the nature of stories in our

lives, as well as training in media production basic skills, lead to development of ideas

about how to best present a story in terms of content and aesthetics, and then to the

editing of the materials. Various components of the process may be done collectively or

individually; however, everyone participates in providing feedback on the development

of the final pieces. The stories are shared with friends, family, and community members,

as well as the world through DVDs, public screenings, and Internet distribution. The

stories not only affect the audience, but transform the storytellers as they experience the

power of giving voice to their own ideas and creativity.

Indigenous Knowledge

Scholars have recognized the difficulties entailed in Indigenous knowledge being

viewed as valid ways of knowing worthy of academic study, as well as the challenges in

outlining a comprehensive and accurate definition of the concept, given the great

diversity of the world's Indigenous people (Semali & Kincheloe, 1999; Dei, Hall, &

Rosenberg, 2000). The following three definitions cover a majority of the key concepts

that comprise an understanding of Indigenous knowledge.

> The term, indigenous, and thus the concept of indigenous knowledge has often
> been associated in the Western context with the primitive, the wild, the natural.
> Such representations have evoked condescension from Western observers and
> elicited little appreciation for the insight and understanding indigeneity might
> provide. But for others, especially the millions of indigenous peoples of Africa,
> Latin America, Asia, and Oceania, indigenous knowledge (or what others have
> called the native ways of knowing) is an everyday rationalization that rewards
> individuals who live in a given locality. In part, to these individuals, indigenous
> knowledge reflects the dynamic way in which the residents of an area have come
> to understand themselves in relationship to their natural environment and how
> they organize that folk knowledge of flora and fauna, cultural beliefs, and history
> to enhance their lives. (Semali & Kincheloe, 1999, p. 3)

> We conceptualize an 'indigenous knowledge' as a body of knowledge associated
> with the long-term occupancy of a certain place. This knowledge refers to
> traditional norms and social values, as well as to mental constructs that guide,
> organize, and regulate peoples' way of living and making sense of their world. It
> is the sum of the experience and knowledge of a given social group and forms the
> basis of decision making in the faces of challenges both familiar and unfamiliar.
> (Dei, Hall, & Rosenberg, 2000, p. 6)

> Indigenous knowledge is an emerging area of study that focuses on the ways of
> knowing, seeing, and thinking that are passed down orally from generation to
> generation. These ways of understanding reflect thousands of years of
> experimentation and innovation in topics like agriculture, animal husbandry, child
> rearing practices, education systems, medicine, and natural resource management
> — among many other categories. (Interinstitutional Center for Indigenous
> Knowledge, Penn State University, 2012)

What these definitions all highlight is the importance of place to Indigenous peoples'

cultures and generational wisdom about how to live well in that specific place. In the

environmental studies literature there is a growing conversation around the idea of

traditional ecological knowledge or TEK, which refers to a specific facet of Indigenous

knowledge about the land and its plants and animals typically coupled with an orientation

toward the sustainable harvesting of local resources. Indigenous ways of knowing, the term I will be using in this dissertation, encompasses traditional ecological knowledge, as well as any other forms of Indigenous knowledge. Following Van Damme and Neluvhalani (2004), the use of this term emphasizes a trend of understanding that what is under consideration is not simply mechanistic knowledge nor systems that can be commodified but dynamic epistemological processes that reside in Indigenous people and communities.

Theoretical Framework

Existing learning theoretical frameworks developed by Indigenous educators and scholars were valuable to this study in the initial approach to the fieldwork and the data. Central to a broadly focused and intertribal concept of Indigenous pedagogy are the notions of relationships and spirit that arguably are fairly universal for Indigenous peoples, despite their great diversity of languages and cultures. Four Arrows (2013) in putting forth a theory of Indigenous learning states

> Indigenous teaching and learning paths are ultimately about cultivating cognition and consciousness via spiritual awareness and reflection on lived experience. They direct us toward realizing that human awareness is a part of life's web. They connect us to smaller and larger elements in the universe. They allow us to see the "whole" as a sacred mystery we cannot fully know but that we can nonetheless change with our thinking and actions. They are about relationships, with the ultimate one being our relationship with our planet. . . . An indigenized approach weaves the empirical and the symbolic, nature and culture, self and community, power and love into a unified and unique vision of the world. (p. 65)

In addition to relationality and spirituality directing an ethical consciousness, Indigenous ways of knowing recognize interconnections among elements that are considered incompatible in Western philosophies, such as aesthetics and physical science (Cardova, 2004). According to Cajete (2000), "Native science encompasses such areas as

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astronomy, farming, plant domestication, plant medicine, animal husbandry, hunting, fishing, metallurgy, and geology….[and] extends to include spirituality, community, creativity and technologies that sustain environments and support essential aspects of human life" (pp. 2-3). This holistic approach to the comprehension of life is one of the hallmarks of an Indigenous worldview.

Battiste (2002) emphasizes that Indigenous education and ways of knowing are predicated on a concept of maintaining well-being. She writes, "inherent in this approach is the realization that ritual, myth, vision, art, and learning the art of relationships in particular environments all facilitate the health and wholeness of individuals, families, and communities" (p. 30). Therefore the role of education is one of creating balance or homeostasis in ever-expanding concentric circles from the individual outward that keeps societies relating to one another and their environments "in a good way."[3] She also offers an outline of the various elements that constitute Indigenous ways of knowing.

> Aboriginal epistemology is found in theories, philosophies, histories, ceremonies, and stories as ways of knowing. Aboriginal pedagogy is found in talking or sharing circles and dialogues, participant observations, experiential learning, modeling, meditation, prayer, ceremonies, or story telling as ways of knowing and learning. The distinctive features of Indigenous knowledge and pedagogy are learning by observation and doing, learning through authentic experiences and individualized instruction, and learning through enjoyment. (p. 18)

The distinctive features that Battiste mentions are aspects of the teaching approach I have utilized as an educator in the three groups that are the focus of this study.

In accordance with an Indigenous learning framework, I have strived to build substantive personal relationships with the participants in these programs while

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[3]The phrase "in a good way" is often used by North American Indigenous peoples to refer to how things, from the mundane to the extraordinary, should be done.

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foregrounding the importance of our relationship as human beings with the various elements of nature and the planet at large. The use of stories and storytelling as ways of learning and knowing has been centrally important to my work with these groups. I have sought to provide rich opportunities for hands-on experiential learning and mentoring while also emphasizing a comprehensive view of the environment that takes into account aesthetics, spirituality, and science. It is my contention that Indigenous ways of knowing and pedagogies, with their focus on complex relationality and learning through story, have a valuable contribution to make to the development of environmental education that is engaging, fosters environmental learning, and makes lasting impacts on participants' sense of ethics and personal empowerment, whether they are Indigenous themselves or not. As the majority of Indigenous people in North America are urban-dwelling and there is a global population shift to cities, it is vitally important for Indigenous ways of knowing to be made relevant in all contexts, not just in rural and wilderness areas that are commonly associated with them.

Summary of the Most Relevant Literature

The literatures regarding Indigenous media production, digital storytelling, environmental aesthetics, multicultural approaches to environmental education, and the intersection of Indigenous ways of knowing with Western science are all pertinent to this study. To place this research in context it is useful to follow the trajectory of Indigenous-produced media, which have been growing rapidly in the last 30 years, particularly with the advent of digital video technology (Palacios, 2012). Digital storytelling is also a distinct practice, a fast-growing modality that is being used both for community work (Lambert, 2006) and in research (Cunsulo Willox et al., 2013). Theories of environmental

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aesthetics are useful when discussing environmental education as a key entry point for the affective realm (Iozzi, 1989).They can also help us understand how Indigenous views of the environment as beautiful are interwoven with an ethical outlook toward it (Cardova, 2004). Multicultural environmental education stimulates a growing conversation in the literature that recognizes that mainstream environmental education has evolved from a White middle-class perspective that is not representative of the majority of society, and therefore seeks to remedy this bias with other cultural perspectives (Marouli, 2002). Indigenous ways of knowing have often been framed in opposition to Western knowledge paradigms, particularly that of Western science; however, there is a fruitful dialogue taking place about the dynamic interplay that can be drawn on when discussing environmental education for Indigenous and marginalized students.

Indigenous video productions can offer new alternatives to conventional viewpoints about art, storytelling, and Indigenous culture. Video arts created by Indigenous people are an important means of challenging conventional arts paradigms and opening space for the expression of Indigenous aesthetics in a contemporary format (Hopkins, 2006). Ginsburg (1994) refers to an "embedded aesthetic" that reflects the deeply social role that connects Indigenous media arts with Indigenous cultures. In her comprehensive assessment of American Indian filmmaking, Singer (2001) connects these modern practices to deeply grounded traditions of orality and storytelling that challenge the stereotypes of Native peoples presented in mainstream media. Sium and Ritskes (2013) emphasize the importance of storytelling as a form of resistance to colonization as well as a resurgence and reaffirmation of the validity of Indigenous ways of knowing. The concept of a "filmic virtual reservation" offered by Raheja (2011) provides an

intellectual space for both critiques of mainstream representations and the assertion of the power of Indigenous paradigms. New media formats are also a very fertile ground for the expression of a contemporary Indigenous aesthetic. For example the internationally popular cartoon series *Raven Tales* (Kisin, 2011) and the multimedia installation work of Lakota artist Dana Claxton (Gagnon, 2005) are viewed as groundbreaking in terms of both content and delivery format.

Digital storytelling is a growing practice that is being both adopted by and adapted to the contexts of Indigenous peoples. Storytelling in and of itself is a central component of human experience that allows us to adapt to a variety of environments and engage in social-ecological learning (Boyd, 2009). Richardson's (2012) assessment of the canon of Gerald Vizenor speaks to the role of narrative in fostering ethical relationships between humans and nature. Stories and storytelling are also an important component of the survival of Indigenous people resisting colonization and maintaining their lifeways (Sium & Ritskes, 2013). Palacios (2012) makes a connection between digital storytelling and traditional oral forms, while also stressing the liberatory potential of this new media format for Indigenous communities. Couldry (2008) also makes an argument for digital storytelling opening up a wider space of media democratization, noting the work of Lambert (2006), who has been one of the key figures in promoting digital storytelling as being beneficial for society at large, including attending to issues of social justice. The benefits can be seen in transformation experiences for both audiences (Skouge and Rao, 2010) and producers, particularly in learning environments (Benmayor, 2008). Cunsolo Willox et al. (2013), Lino (2012), and Palacios (2012) make the case for digital storytelling/filmmaking being a valuable tool for conducting research in Indigenous

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communities for both health and environmentally related issues. Leuthold (1998) emphasizes the role of the environment in the aesthetics of audiovisual media produced by Indigenous people.

In the context of environmental education, non-White perspectives have often been ignored, marginalized, or made to seem primitive. In the 1990s a number of environmental educators, particularly those of color, with a social and environmental justice perspective, criticized this bias (Running Grass & Weintraub, 1996). Running Grass and Agyeman (2002) suggest that structuring, content, and delivery of environmental education is a civil rights issue, as it pertains to lack of access to a needed resource. Marouli (2002), citing Running Grass, one of the primary early articulators of multicultural environmental education, outlines some of its key elements as exposure to and respect for cultural diversity, promotion of environmental justice, the use of constructivist pedagogy, and community involvement. In response, a number of publications in the North American Association for Environmental Education's (NAAEE) Guidelines for Excellence in Environmental Education (2009, 2010a, 2010b) address the need for diverse cultural perspectives in the field.

In practice, some multicultural environmental education programs, in addition to promoting contact with nature and environmental/ecological literacy, also successfully achieve youth-development goals in the course of their activities (Morgan et al., 2009; Schusler & Krasny, 2010). Some educators and theorists also call for a transformative sociopolitical agenda. An emerging literature written by both people of color and White authors calls for "critical pedagogy of place" (Gruenewald, 2003), "ecosocialist critical pedagogy" (McClaren & Houston, 2004), "ecojustice pedagogy" (Bowers, 2001; Jucker,

2004), "ecopedagogy" (Kahn, 2008, 2010), and "land education" (Bang et al., 2014; Calderon, 2014; Paperson, 2014), all of which involve a more radical expression of multicultural environmental education. The last two are quite explicit in arguing for the importance of Indigenous ways of knowing and critiques of colonialism factoring in to environmental education. Longboat, Kulnieks, and Young (2013), speaking from the standpoint of Indigenous and ecojustice environmental education, also stress the importance of environmental education moving beyond simply learning about nature towards taking into account the complex relationships between culture, politics, climate change, food issues, and biodiversity loss. Agyeman (2006) argues for the necessity of environmental education research that looks at the intersection of race, power, and culture with action, behavior and technology. The development of social capital is another factor in community-based environmental education programs that is being examined for its role in fostering collective action and empowerment (Krasny et al., 2015), which is also strengthened by intergenerational learning (Ballantyne, Connell & Fien, 2006; Duvall & Zint, 2007).

Environmental/ecological literacy and identity are important aspects of environmental education that need to be taken into account when assessing programs. Ecological literacy focuses on understandings of the natural world and its workings (Orr, 1992). Environmental literacy definitions tend to include ecological knowledge, but also stress a wider awareness of environmental issues and the ability to act on them. NAAEE (2011) defines an environmentally literate person as someone who has a diverse breadth of skills and knowledge about environmental concepts, problems, and issues, and is capable of taking informed action through civic engagement. Mitchell and Mueller

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(2010) stress the importance of ecojustice frameworks being incorporated into definitions of environmental literacy. Environmental and ecological identity descriptions share an overlap similar to those focused on literacy. Thomashow (1995) highlights peoples' cognitive, intuitive, and affective perceptions of ecological relationships and their own relationship to nature. Kempton and Holland (2003) focus on a "social environmental identity" that takes into account self-definitions as an environmentalist or member of an environmental group. The role of significant life experiences and memories of participation in environmental programs for fostering environmental identities and behavior is noted by researchers who are conducting longitudinal studies (Williams & Chawla, 2015).

As environmental education often involves science to varying degrees, a growing literature is focused on the intersection of Western science and Indigenous ways of knowing. Semali and Kincheloe (1999), as well as Newhouse (2008), articulate the core essence of Indigenous knowledge as being shaped by a deep relationship with the environment that informs all aspects of life from the material (e.g., agriculture, architecture, botany) to the metaphysical. A deeply spiritual worldview undergirds all the elements of these diverse ways of knowing. While some see them as antithetical, Agrawal (1995) argues that there are a great many parallels and that simplistic binary oppositions of "Indigenous versus Western" are not useful or productive. A number of educators have found ways to work with both Indigenous and Western Mainstream Science ways of knowing in the classroom and other environmental education contexts (Cajete, 1994; Asafo-Adjei, 2004; Van Damme & Neluvhalani, 2004; Barnhardt, 2008; Shava, 2008; Aikenhead, 2011).

In addition to considering the role of science and Indigenous ways of knowing in environmental education, the affective and aesthetic realms must also be examined. Some environmental ethics philosophers (Brady, 2004; Carlson, 2012; Hogue, 2010) contend that arguments based on aesthetics are some of the strongest for making the case for conservation and environmental protection. Cordova (2004) contends that in American Indian worldviews, aesthetics and ethics are completely intertwined.

Last, it is important to examine the use of the arts and digital technology for environmental education purposes. The concepts of "nature deficit disorder" (Louv, 2008) and "videophilia" (Pergams & Zaradic, 2006) speak to the issues of decreased nature contact and increased electronic media use, respectively, that prevent people, particularly young people, from being exposed to the outdoors, where they could receive the benefits of being in nature. However, an increasing body of educators is finding ways of using media arts technology to further the reach and impact of environmental education efforts (Stables, 1998; Corwin, 2010; Hill & Nelson, 2011; Roberts, 2011; Tsevreni, 2011). Kahn (2010) and Blewitt (2011) argue for media literacy, particularly in new and emerging multimedia, as being an often overlooked but important component of modern environmental education. The use of the internet for the distribution of multimedia that encourages environmental literacy and pro-environmental behaviors is also being noted by a growing number of researchers (Shoemaker, 2007; Harness & Drossman, 2011; Robelia, Greenhow, & Burton, 2011; Fauville, Lantz-Andersson, & Säljö, 2014).

Problem Statement

We live in a time of tremendous environmental challenges. One need only glance at the news to hear reports of climate change, mass species extinctions, plastic garbage patches the size of a large state in the world's oceans, and radioactive materials leaking from the Fukushima reactors, to name but a few. Access to potable water is a major issue for many communities around the world, particularly Indigenous ones. Additionally, electronic media usage is seen as taking people, especially young people, away from contact with nature. Engagement with Indigenous knowledge and ways of knowing pertaining to the environment has been offered as an environmental education intervention for both Indigenous and non-Indigenous students. It is hoped that this type of pedagogy will connect them with the natural world and help them develop a sense of ethics and responsibility toward the environment; however, this impulse sometimes may tend to a primitivist discourse that shuns modern technology. In order to face the environmental challenges of the 21st century and counter the effects of "nature deficit disorder," young people need to have access to diverse pedagogies that empower them to navigate a high-tech world while developing personal and ethical relationships with the environment. Moreover, Indigenous and other minoritized youth of color need educational models that support them in "survivance"[4] — moving from basic survival and resistance to racism and colonialism to being thriving and resurgent.

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[4] A term attributed to Anishinabe author Gerald Vizenor (1999) that he has described as "an active sense of presence, the continuance of native stories, not a mere reaction, or a survivable name. Native survivance stories are renunciations of dominance, tragedy and victimry" (p. vii).

Significance of the Research Problem

In this day and age, electronic media is an ever-present element in most people's lives. From Americans, young and old, who passively watch hours of electronic entertainment every day, to Indigenous people in the Amazon who run a generator to watch American TV shows, it is clear that media consumption is a part of modern life for many people in the world and is only likely to increase in the coming years. With the advent of Internet video delivery platforms such as YouTube and Vimeo, do-it-yourself video media authoring is also rapidly increasing. At the same time, people are becoming increasingly aware that terrestrial and social environments are under tremendous stress from many aspects of modern industrialized society.

A frequent reaction to increased television watching and other passive media consumption was alarm that it was replacing other life activities, particularly outdoor recreation and contact with nature. An online survey of 500 K-12 teachers revealed that 91% regularly use in the classroom some form of new digital media, as opposed to simply playing DVDs or showing television programming (Public Broadcasting Service Learning Media, 2012). Given the desire of many educators for students to be environmentally literate and able to tackle issues of sustainability, while also being adept at computer and media technology, it is timely to examine ways in which technology can serve environmental education goals. Among Indigenous and other minoritized communities in North America there is also a growing effort by educators to incorporate Indigenous ways of knowing and culturally relevant local knowledge about the environment in both formal and informal learning settings (Hearne, 2006).

People of color in the Americas disproportionately contend with social, political, and economic marginalization and oppression, in addition to degraded and polluted physical environments. Formal education is very often substandard and ineffective in meeting the needs of these communities. Thus environmental education that is tailored to the culture and local contexts of a community has the potential to empower people to effect social and environmental change, as well as personal transformation. This research concerns culturally based environmental education in three groups of students of color, one with a mix of cultural/ethnic backgrounds and two comprised solely of Indigenous people. The programs engaged Indigenous perspectives and knowledge of the environment combined with the use of digital storytelling as a means both to involve the students deeply in the educational process and also to extend lines of communication and knowledge sharing with the communities surrounding the groups (Cajete, 1994).

Indigenous peoples globally exist in a complex, tenuous, and conflicted space, both in the perceptions of many people in society at large and on the ground in their territories and homelands, where land theft, climate change, and environmental degradation have negatively impacted food and water supplies and livelihoods. Indigenous people disproportionately bear the brunt of the impacts of the rapacious practices of modern civilization and neoliberal globalization, with its large-scale resource extraction policies. In many countries, including the United States and Canada, lands have been appropriated for conservation and parks, where the interests of Westerners, settler colonists, and wildlife conservationists trump the needs of people who have lived close to those lands for countless generations. Industrial energy and resource extraction and appropriation for military training and weapons testing have turned cherished lands

that sustained rich ecosystems and cultures into polluted wastelands unfit for human habitation. Contemporary environmental injustices are the consequence of a colonial history replete with domination, oppression, and outright physical and cultural genocide. These policies are rationalized in the public mind through negative images of Indigenous peoples as backward, savage, and uncivilized (Simpson, 2002; Longboat, Kulnieks, & Young, 2013).

Despite having diverse and rich cultures replete with substantial oral histories and mythopoeic stories, as well as highly sophisticated traditions of governance, medicine, agriculture, and other forms of traditional ecological knowledge (sometimes abbreviated TEK), Indigenous people in Western popular culture are often reduced to simplistic stereotypes. Nowhere is this more blatant than in Hollywood western films, but it can also be found in most media produced by non-Indigenous people—textbooks, comic books, popular songs, advertising, and team logos, to name a few. However in the late 20th and early 21st centuries, with the availability of relatively inexpensive video production equipment, many Indigenous people have employed this technology for a variety of purposes, from documentation of language and cultural traditions to advocacy to protect land from appropriation and environmental damage. Indigenous people are challenging the stereotypes of themselves both through the content of these productions (which range from documentaries and feature length narratives to music videos, as well as installation art and experimental works) as well as the very fact of their utilization by people deemed to be primitive and unsophisticated. The sight of Kayapo people of the Amazon in their traditional adornment wielding video cameras in order to protect their

rainforest homelands and ways of life is a visual juxtaposition that destabilizes Western tropes of what constitutes authentic indigeneity (Bell, 2003).

In American outdoor and environmental education, any engagement with Indigenous ways of knowing and traditional ecological knowledge is usually confined to the realm of "primitive" skills and a vague philosophical notion of "oneness with nature" that is supposed to exemplify the archetypical "noble savage." While it is true that the range of Indigenous ways of knowing and traditional ecological knowledge includes a wide variety of skills and philosophical traditions that are focused on sustainable relationships with a particular environment and typically the world at large, modern Indigenous students are also navigating a media-saturated technological age that can be in tension with conceptions of cultural traditions (Ryan, Van Every, Steele, & McDonald, 2013). Since the time of contact with Europeans, Indigenous people have adopted new technologies (once guns, kettles, and beads, later petroleum-powered vehicles, computers, and geographical information systems). Adoption was often opportunistic, but not without internal debate about their appropriateness relative to traditional lifeways. Within the Indigenous education literature there exist debates about whether decolonization goals should simply be oppositional or if, in so doing, they are reifying a simplistic dualism of Western versus Indigenous knowledge that is neither accurate nor serves the needs of Indigenous students for a comprehensive education that is solidly grounded in Indigenous traditions, yet open to engaging other ways of knowing (Smith, 1999; Simpson, 2002).

Students in Indigenous settings or ones informed by Indigenous ways of knowing are often negotiating a multitude of inputs into their sense of self and subjectivity as it pertains to human-ecological relationships: traditional ecological knowledge via elders

and other community knowledge holders, media representations, peer group norms, tribal economic development endeavors, their personal relationships to technology (particularly electronic media), as well as the pedagogy they are experiencing in school and in extracurricular settings.

Contribution of This Study

In this research I explore the intersection of digital storytelling and Indigenous ways of knowing, which I assert is valuable to both environmental educators and researchers interested in innovative approaches to student engagement and empowerment, as well as the development of environmental literacy, identity, and ethics. Two of the research sites' participants that were interviewed were reflecting on experiences ranging from two to eight years prior; therefore it also makes a contribution to research on significant life experiences. Insights into the use of media technology to foster environmental learning, rather than disconnection from nature, are valuable for educators working with students who are "digital natives." This study also speaks to a broadening of the use of Indigenous ways of knowing in diverse educational contexts, as it focuses on sites ranging from grade school students located on a rural reservation to young adults from reservations and urban areas and to students of color in a college town. Furthermore, it provides a view of the practical application of ecojustice-informed pedagogy, which is underrepresented in a field of literature that is predominantly theoretical. Finally, this study is a window into the story of an Indigenous environmental educator and participatory researcher that I hope will be of benefit to others working in these fields of practice and study.

Of equal importance to the contribution this dissertation makes to the fields of environmental education and Indigenous studies are the benefits accrued by the community organizations involved in the study by having their work deeply reflected upon. Future operations of both GGs and EILI are dependent on funding being available. The findings from this research are currently serving both to refine and develop their future pedagogical strategies and curriculum, as well as to document the effects of their programming, which can be an asset for grant proposals. For ECLC, the knowledge gained from this research process has already helped them to assess the use of garden-based learning that is connected to the traditions of that community, as well as the potential for creative use of digital media in their classrooms. Naturally, my development as an educator, practitioner, participatory researcher, and academic to chart a relatively under-theorized and under-explored realm of environmental education has benefitted greatly as well.

Purpose of the Study

The purpose of this study is to investigate how students experience environmental curricula and teaching approaches that are drawn from Indigenous ways of knowing and employ digital storytelling technology as a learning tool. I examine the experiences of the students in the three research sites for possible insights into teaching and learning strategies in environmental education.

> Environmental education helps learners achieve environmental literacy, which has attitude and behavior components in addition to a knowledge component. The goal of environmental education is to instill in learners knowledge about the environment, positive attitudes toward the environment, competency in citizen action skills, and a sense of empowerment. (Athman & Monroe, 2002, p. 37)

To explore how the experiences of participants speak to these goals, I utilize students' interview responses about their participation in these three programs, analysis of student video projects, as well as my own narrative as an educator. Additionally, I explore the use of Indigenous ways of knowing and digital storytelling as pedagogical elements of these programs. Each site differs in its primary educational goals, as well as the type of student it serves; therefore, a variety of outcomes and responses are to be expected. This study is interpretive in nature, and there are no before and after data to explore metrics of change, such as there would be in an experimental study. My focus is on qualitative expressions of engaging and culturally relevant environmental education experiences that foster environmental literacy, environmental ethics, community engagement, and a sense of empowerment. The three research sites are each unique in their cultural and historical context; therefore, broad generalizations are not sought out from the data.

To generate rich descriptions of students' experiences and personal meanings, I selected narrative inquiry, case study, grounded theory, and autoethnographic research strategies of inquiry informed by Indigenous research methodologies. These strategies of inquiry were employed selectively according to the types of data available at each research site. The stories told in the findings chapters by interweaving these elements are examined for answers to the research questions. "Narrative inquiry is a way of understanding experience. It is a collaboration between researcher and participants, over time, in a place or series of places and in social interaction with milieus" (Clandinin & Connelly, 2000, p. 20). These qualities of narrative research were a good match for my role and level of involvement in the three educational programs. The case study method

of inquiry prompted me to use multiple sources of data, including videos, survey questionnaires, and documents. Grounded theory encouraged me to approach the data with an open mind while seeking out what it was revealing about the research questions. The autoethnographic approach allowed for another source of data, the perspective of the participant–observer, which increases the descriptive depth as well as the validity of the themes and conclusions reached. An overarching orientation from the field of Indigenous methods was vital to this study for both philosophical and ethical reasons. In Chapter 3, I expand on my reasoning for my choice of methods.

Research Questions

One of the areas of inquiry that emerged from my master's thesis, *Multicultural Multimedia Learning for Sustainability: A Narrative Case Study of Green Guerillas Youth Media Teach Collective*, that warranted further investigation was the significance of our use of Indigenous ecological philosophies and pedagogies in a youth environmental education program. I was interested in how the participants experienced an education program that emphasized Indigenous ecological values and perspectives, e.g., the need for relationship, reciprocity, respect, and responsibility between people and the natural environment and incorporated Indigenous approaches to teaching and learning, such as storytelling and land-based, out-of-classroom, experiential learning (Kulnieks, Longboat, & Young, 2013). Another area of inquiry that emerged was the question of how the use of digital storytelling in environmental education would be experienced by students of different ages (younger and older students), living in different environments (rural and western regions), and of different ethnic backgrounds than the GGs. Several other initial research questions emerged from my participation and observation with these

three diverse groups: high-school age youth of color in a media arts collective in a youth development program in Ithaca, NY; college-age Native students from three Great Basin nations in an Indigenous leadership program; and 8- to 12-year-old Seneca students in a rural, reservation-based after-school program. These questions helped me to reflect on the general direction of this study and eventually, through an iterative process, home in on the core essence of what this research was revealing. The *initial research questions* were:

- How did diverse students experience a curriculum that employed digital media technology and Indigenous ecological knowledge, values, and ethics?

- How did students from marginalized cultures experience having technical knowledge and tools to tell their stories?

- How were students engaged and involved in the learning process?

- How did students experience an awareness of environmental issues and a sense of environmental stewardship for their communities?

As I developed the study further and reflected on what the data were showing, the research questions went through several iterations before settling into their present form. For this study there is one overarching question and four related subquestions:

Overarching Research Question

What were the experiences and perspectives of participants in programs that utilized a combination of digital storytelling and Indigenous ways of knowing to foster environmental learning?

Subquestions

- What aspects of these programs did participants find engaging and meaningful?

- How did hands-on learning experiences and mentoring interact with the digital storytelling aspects of these programs?

- How do participants in these programs articulate their identities and sense of ethics in relation to the environment?

- How did participants experience a sense of empowerment?

I wanted the research questions to speak to goals that were personal, intellectual, and practical in nature (Maxwell, 2005). Being a primary educator at all three sites, I have a deep personal interest in how the pedagogy I have developed is received by students. From an intellectual standpoint I wish to contribute to the fields of both Indigenous studies and environmental education by examining the use of Indigenous ways of knowing and digital media for environmental learning. The practical goals I am seeking to address are how to get young people engaged in learning about the environment while gaining a sense of empowerment, as well as the need to document and disseminate the work of the three organizations involved in the study. As an educator I feel that these questions are particularly relevant to other practitioners who are seeking insights on utilizing media technology and Indigenous worldviews in creative ways for environmental education purposes.

The Dissertation Chapters

This dissertation is organized into seven chapters. Chapter 1 provides an overview of the key components of the study. These include the rationale for the selection of research sites, the researcher's background and roles in the educational programs at these sites, the theoretical framework that supported the topic selection, a short review of the most relevant literature, a problem statement, the significance of the research study, and the research questions.

Chapter 2, the literature review, is organized into eight subthemes related to the three central areas of research inquiry: Indigenous ways of knowing, digital storytelling, and environmental education. These subthemes are: 1) Indigenous knowledge and ways

of knowing; 2) Indigenous video production and cultural sovereignty; 3) digital storytelling in Indigenous contexts; 4) digital media, the arts, and environmental education; 5) aesthetics and environmental ethics; 6) environmental/ecological literacy and identity 7) multicultural environmental education; and 8) Indigenous knowledge, Western science, and environmental education for Indigenous people.

Chapter 3, on research design and methodology, provides the details of the strategies of inquiry, the research methods, and the procedures I used for data collection and analysis. A restatement of the research questions and a detailed explanation of the research plan, as well as my role and subjectivity as the researcher, are given. The chapter is presented as a narrative of my investigative journey into the qualitative methods that were most appropriate for this study — narrative inquiry, Indigenous methodologies, autoethnography, and grounded theory.

Chapter 4 presents the findings from the research questions explored with the Green Guerillas Youth Media Tech Collective alumni and former adult volunteer mentors. The themes emerging from the interviews were many: that the group's pedagogy sparked a desire to learn; that social and political education-focused media literacy, a hands-on curriculum that adapted to the youth participants' interests, encounters with healthy and culturally diverse foods, and interpersonal connectivity all fostered engagement with the educational goals of social and environmental critical consciousness; that digital storytelling provided a bridge to learning, public recognition as storytellers and change agents, and an opportunity for memorable nature experiences that they connected with their activism; that exposure to Indigenous ways of knowing enriched their environmental learning while also adding a spiritual dimension; and that greater

environmental ethics and significant personal meanings attributed to their tenure in the program had lasting effects.

Chapter 5 presents the findings from reviewing the videos made by, and the email interviews of, the Emerging Indigenous Leaders Institute alumni, combined with an autoethnographic narrative thread of my perspective as their instructor. The digital stories they created showed a high level of awareness and understanding of environmental issues in their communities as seen through the lens of culture and tradition. They felt that digital media is intrinsically engaging and has a valuable educational role in preserving language and traditions, as well as communicating with the non-Native world. Their participation in the program and experience with creating these stories strengthened their environmental ethics and instilled confidence and a sense of empowerment that they could act effectively as community leaders. They also discussed the importance of decolonizing the diets of Native peoples.

Chapter 6 discusses the results of the ethnographic research at the Seneca Nation's Cattaraugus Territory Early Childhood Learning Center. The students showed comfort and familiarity with media technology and enjoyed the digital storytelling process of shooting stills and video footage. They found that digital storytelling was helpful to them as a learning aid. In addition to enjoying learning about gardening in a cultural framework, they got great satisfaction out of the recognition they received for their hard work. Sharing the finished video with families and the community was a valuable experience. Being able to make traditional foods that they enjoy was a motivating factor for them in working on the garden. They also exhibited a sense of environmental ethics that took into account human-plant relationships.

Chapter 7 summarizes how the findings for all three groups answered the questions posed at the start of the research and how those questions evolved during the analysis of the data. Different aspects of the effectiveness of digital storytelling combined with Indigenous knowledge and embedded in an Indigenous pedagogy were found for all three groups. Common themes are that the process was engaging and satisfying and that it developed a greater aesthetic appreciation of the environment, a sense of its importance for sustenance and well-being, and a deepening of the spiritual relation to the environment. These are all elements of effective environmental education in development of environmental literacy and environmental stewardship. Implications for environmental education practice and further research are discussed.

Chapter 2. Literature Review

This chapter reviews the conceptual and empirical literature relevant to the purpose of the study and the research questions. The literature regarding Indigenous knowledge, Indigenous media production, digital storytelling, environmental aesthetics, multicultural approaches to environmental education, and the intersection of Indigenous ways of knowing with Western science are all pertinent to this study. The literature on Indigenous knowledge and traditional ecological knowledge will be reviewed first, followed by reviews of the utility of digital media technology in Indigenous communities and environmental education. The last section will focus on culturally competent environmental educational teaching and learning strategies for Indigenous and minoritized youth.[5]

Indigenous Knowledge and Ways of Knowing

Indigenous and non-Indigenous scholars generally agree on some common characteristics attributable to Indigenous knowledge (IK). According to Newhouse (2008), summarizing the findings of several Native North American authors, Indigenous knowledge

> comes about as a result of a long, intimate relationship with a particular
> environment, is based on careful, long-term observation and testing of hypotheses,
> is tested regularly through use and practice, is modified according to changing
> environmental conditions and reason, and is rooted in Indigenous understandings
> of the nature of the universe. In IK reason and passion are intertwined. IK is
> transmitted through practice, ceremony, and instruction. IK rests on a spiritual
> foundation. By spirit I mean a sense of the interconnectedness of things and a

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[5] In this dissertation, I use the term "Indigenous people" primarily to refer to the descendants of the original peoples of the settler states of Canada and the United States of America, although I also cite studies pertaining to the first peoples of other countries where that appellation is appropriate. "Aboriginal," "Native," and "American Indian" are synonymous in this North American context.

sense that we live in a sea of energy that animates everything. The universe is alive. IK is multidisciplinary in nature. Its most common and best-known discipline is TEK, Traditional Environmental Knowledge. (p. 190)

Semali and Kincheloe (1999) summarize Indigenous knowledge as the dynamic way people of a given area have come to understand their local environment and to organize their knowledge of it, in combination with their history and cultural beliefs, so as to benefit their lives. They also note that while aspects of Indigenous knowledge can vary within a community, it is inextricably tied to a particular community and cannot be separated from it. Indigenous knowledge is embodied in a plethora of diverse ways of knowing, with deep, ancient roots in human history and experience. Additionally it contains a profound connection to the unseen world: "the discourse of many indigenous knowledge systems is metaphysical, based on the forces that connect people to one another, and inseparable from religion. Often agricultural, culinary, medical, architectural knowledges in indigenous discourses are intricately intertwined with the theological realm" (Semali & Kincheloe, 1999, p. 51). Many Indigenous peoples refer to their beliefs as a "way of life" rather than a religion. Everything in life, from the most mundane daily tasks to items of material culture, is infused with a connection to the community's spiritual worldview. While this appears to be different from mainstream Western practices, where religion is often compartmentalized from other aspects of life, some observers feel that there are many parallels between Indigenous and Western knowledge systems.

Agrawal's (1995) survey of the literature regarding Indigenous knowledge and Western knowledge finds that most authors differentiate them on substantive grounds (subject matter), epistemological and methodological grounds, and contextual grounds

(abstract and universalized knowledge vs. locally rooted knowledge). However, he finds that these contrasts are not highly useful, as there are more parallels and intersections than disjunctures. Prakash (1999) notes that this differentiation has concrete manifestations and consequences both for the environment and for human freedom. The issues of power, and cultural and ecological survival, are inextricably intertwined when one knowledge system is deemed valid and the other primitive or savage. However, in the last half millennium or so, Indigenous knowledge has become marginalized and nearly or completely extinguished in many parts of the world due to the "colonizing global spread of modern knowledge systems, technologies, and institutions" (Prakash, 1999, p. 164). Semali and Kincheloe (1999, p. 36) make an important related point that, "often misunderstood in Western education, power refers not simply to the control of financial, institutional, political, ideological, and communicative resources, but also the control of representations of reality." Indigenous peoples and their ways of knowing the world are often portrayed in academic and popular media as simplistic and superstitious compared to those holding the "modern" (rational and scientific) worldview. Often, only when Western science validates some aspect of Indigenous knowledge is it given any kind of consideration.

Interestingly, Agrawal (1995) finds that many of the proponents of the validity of Indigenous knowledge fall into the same binary trap of oversimplification that plagues its detractors. His work has found substantial diversity within the wide array of Indigenous knowledge systems throughout the world, as well as similarities between Indigenous knowledge and Western science, not to mention cross-cultural adaptation of ideas and technological innovations that make rigid dichotomies untenable. Semali and Kincheloe

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(1999, p. 23) concur, noting that these "cultural and epistemological issues are complex and our concern is to avoid essentialist solutions by invoking simplistic binary oppositions between indigeneity and colonialism." That is, advocates of Indigenous knowledge run the risk of falling into the same ideological space as those who would marginalize it by adopting a reactionary position.

Van Damme and Neluvhalani (2004) posit that "Indigenous ways of knowing" — the term they prefer to the more commonly used Indigenous knowledge — are dynamic, living, and multifaceted. Therefore the simplistic definitions of Indigenous knowledge used (by development specialists, for instance) do not resonate at all with many Indigenous peoples. In recent history a major point of differentiation between the two concepts has been the holistic nature of Indigenous knowledge systems, which do not separate the realms of spirituality and ethics from naturalistic observation and material culture, versus Western knowledge systems, in which religion or spirituality and science are rigidly separated. Nevertheless a growing number of scientists are finding a spiritual dimension to their work (Peat, 1994), and Indigenous people increasingly see value in cross-cultural collaboration (Colorado, 1988; Cajete, 2000). In the realm of higher education, Anderson (2009) argues that the field of Indigenous studies must make use of all available epistemologies, and that density more than difference should be the focus, which would develop a rich and multifaceted framework that avoids essentialism while drawing what is practical and useful from both Indigenous and Western ways of knowing. Shava et al. (2010), drawing from their research on the resilience and hybridity of agricultural knowledge in communities that have experienced migration to new lands and urban areas, suggest that "environmental education programmes that incorporate multiple

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forms of knowledge also may challenge such dichotomous notions and have potential for extending previous work focusing on indigenous science education to urban settings" (p. 586). Given the extensive historic displacement of Indigenous peoples in North America and contemporary trends of urban migration, such considerations are crucial to the development of comprehensive environmental education practices and research in those communities.[6]

As with Indigenous knowledge, there is no universally accepted definition of "traditional ecological knowledge." The term "traditional" itself is open to question, because technologies and practices change over time and in recent times rapidly for Indigenous peoples. However, scholars agree that Indigenous ecological knowledge differs from scientific ecological knowledge in substantive ways, such as being qualitative rather than quantitative, intuitive rather than rational, holistic rather than reductionist, developed by users of the resources rather than by specialized scientists, and developed and has meaning in a social context. In Native communities where hunting, fishing, trapping, farming, and herding are still sources of food and income, Indigenous ecological knowledge has community, moral, and spiritual elements in addition to practical knowledge of the local environment. Taking these elements into consideration, Berkes (1993, p. 3) arrived at the following working definition of TEK:

> TEK is a cumulative body of knowledge and beliefs, handed down through generations by cultural transmission, about the relationship of living beings (including humans) with their environment. Further, TEK is an attribute of societies with historical continuity in resource use practice; by and larger, these

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[6] For instance Bridging The Gap, an environmental education program serving inner-city students in Winnipeg, the Canadian city with the largest population of Indigenous people, is giving these issues thoughtful consideration as it adjusts its curriculum to best suit the needs of learners. See Sutherland and Swayze (2012).

are non-industrial or less technologically advanced societies, many of them
indigenous or tribal.

Increasingly, ecological scientists have come to see TEK as a legitimate field of
environmental expertise useful for understanding how ecological systems work and for
new insights into how components interact in ecological systems. TEK is seen as also
offering insights into natural resource management, conservation education, and in
assessing environmental issues and predicting outcomes of development (Inglis, 1993).

In summary, Indigenous ways of knowing are a people's body of collective
knowledge and experience drawn from long-term relationships with particular places and
ecosystems. They tend to be holistic in their interweaving of material practices for
subsistence, knowledge of flora and fauna, and spiritual beliefs with an emphasis on
interrelatedness. Though they have been suppressed and marginalized by processes of
colonization and are often perceived to be only located in a mythical past, Indigenous
ways of knowing have been highly adaptive, striking a balance between maintaining
traditions and adopting innovations. Some observers might think that advanced digital
media and Indigenous ways of knowing would not be compatible, due to a limited
viewpoint that only allows Indigenous ways of knowing to be located in the "primitive."
However Indigenous peoples worldwide are finding audiovisual media to be a valuable
tool that can be connected to ancestral storytelling traditions.

Indigenous Video Production and Cultural Sovereignty

To understand how digital storytelling through an Indigenous lens can enhance
environmental learning, we need to review the recent history of Indigenous video
production and Indigenous approaches to environmental education as well as the
influence of multicultural education on environmental education. Given the colonial

history of marginalization of Native peoples and the legacy of negative depictions in film and television that situate them in a primitive past, Native-produced audiovisual media can serve as counterbalancing, self-determined and authentic cultural expressions. In particular, Indigenous digital storytelling can help preserve endangered knowledge about environmental stewardship and sustainability and aid in the "crafting of alternatives to some of the broader societal narratives which so profoundly shape the North American school experience (e.g., individualism, rationalism, technological determinism, resourcism)" that have "wreaked havoc" with nature (Bell, 2003, p. 95).

In the field of environmental education, power imbalances stemming from colonization and racism create tensions between Indigenous ways of knowing and Western science (Korteweg & Russell, 2012). Non-Native environmental educators often romanticize the knowledge of Indigenous people embedded in their traditional lifeways and place it solely in the realm of "primitive skills" or disregard it as unscientific. Educators struggling with the dual problems of a colonial curriculum and underachieving Native students are seeking ways to counter the invalidation of Indigenous ways of knowing and integrate traditional ecological knowledge with Western science to successfully educate their students (Cajete, 1994; Richie, 2012; Sutherland & Swayze, 2012). These challenges are being addressed by scholars and educators, both Native and non-Native, who are seeking ways to engage respectfully with Indigenous ways of knowing in a variety of learning contexts, from academia and K-12 schools to informal and non-formal educational outlets (Cajete, 1994; Barnhardt, 2008; Castagno & Brayboy, 2008; Aikenhead, 2011; Kapryka & Dockstator, 2012; Bang et al., 2014). With the growing quantity of media produced by Indigenous peoples being utilized for artistic

expression, political and environmental advocacy, and documentation of cultural practices and languages, the current interaction between Indigenous and Western ways of knowing deserves close attention for its possibilities for expanding and enriching the field of environmental education.

As Indigenous production of movies, television, video art, and digital stories has increased, questions have arisen about how these works deal with the intersection of Indigenous ways of knowing and aesthetics. Generally speaking, Indigenous worldviews are based on a holistic, relational, and experiential philosophical orientation (Burkhart, 2004) that is cyclical in nature (Cajete, 1994), while audiovisual media is linear, time-based, and has its own aesthetics derived from Western traditions. Photography and film have often served the projects of colonization and assimilation, from the works of Edward Curtis depicting a romanticized people on the verge of disappearing, to the Hollywood western with its own false depictions of those who would be broadly known at home and around the world as American Indians. Voyeuristic tourists photographing sacred ceremonies in the early 20th century became so problematic that some Native communities enacted bans on photography by outsiders (Payne, 2000). To this day, many Native North American peoples do not allow ceremonies to be recorded in any way. As Payne states, "it has long been accepted that the photographic gaze marks a site of aboriginal subjugation in North America" (p. 16). Hearne (2006) notes Edward Curtis's work in both photography and film as emblematic of the problematic construction of Native culture in visual media that "undermined Native survival by presenting a vanished Indian" (p. 311). However, despite the historical tensions associated with moving picture media, Indigenous people globally are embracing its use as a means to keep their cultures

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and worldviews alive within their communities and in dialogic exchange with other Indigenous people and the world at large.

While filmmaking (using true silver-based film) has remained out of reach for most Indigenous people due to its high costs and technical complexity, analog and digital video have been widely embraced to produce narratives, documentaries, and experimental works. In this realm, conventional Western aesthetic standards can be challenged, for, as Hopkins (2006) argues, "video opened up a largely unexplored artistic terrain — one that in its very materiality, its impermanence and reproducibility, challenged the unique and precious nature of the art object and, in turn, the authority of the art institution" (p. 342). Equipped with a tool that had the potential to empower rather than marginalize, Indigenous people began to express their own worldviews. Combining the totality of Indigenous peoples' experiences, both traditional and non-traditional, gives definition to a contemporary Indigenous aesthetic (Masayesva, cited by Hopkins, 2006). In a time when visual media is so widespread throughout the world, Indigenous people are utilizing video as an important means of expressing a marginalized and overlooked voice. Ginsburg (2002) notes that not only Indigenous filmmakers but also scholars and policy makers are promoting Indigenous use of visual media as a new opportunity for self-expression, cultural regeneration, and advocacy. This owes in large part to these technologies' potential for the creation of community-generated productions, as well as the development of viewing conditions and audiences shaped by an Indigenous agenda.

Leuthold (1998), referring to the work of Leslie Marmon Silko, argues that visual representations are taken very seriously by Indigenous people—from ancient petroglyphs to the early embrace of photographs by some Natives to tell family and tribal narratives.

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He states, "as an integral part of culture, earlier visual genres were central to the public life of the tribe or community because they celebrated commonly held values embodied in ceremonial ritual and symbolism" (p. 85). Many Indigenous media productions serve similar functions today. While attention is certainly paid to the technical details of cinematography, sound acquisition, and editing, of equal importance is the overall context and meaning to the community.

Ginsburg (1994) terms this aspect of Indigenous film and video "embedded aesthetics," so as "to draw attention to a system of evaluation that refuses a separation of textual production and circulation from broader arenas of social relations" (p. 368). In her work among Aboriginal Australian video makers, she found that the extra-textual aspects are just as, if not more, important than the content — culturally important relationships are affirmed and the cosmology that is central to their ritual life is accorded a deep respect. George Burdeau, an Emmy Award-winning director and producer from the Blackfeet Nation, is noted for his productions where "as much attention is paid to the people behind the camera as to what is going on in front of them" (Kilpatrick, 1999, p. 220). For many Indigenous filmmakers, their peoples' entire social context and historical legacy contribute to the aesthetic considerations, not simply the technical aspects of the art form such as lighting, camera movement, and editing style, giving cultural and historical depth while also validating the experiences of Indigenous audiences.

Santa Clara Pueblo filmmaker and film scholar Beverly Singer (2001) describes Indigenous filmmaking as an act of "cultural sovereignty," in which ancient traditions such as oral storytelling are adapted into the present to serve the desires and needs of the communities from whence they originate. Telling one's own stories, given the lengthy

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history of non-Indigenous misrepresentation, becomes a very powerful part of self-determination, along with the preservation of language, treaty rights, and traditional subsistence lifeways of hunting, fishing, gathering, and agriculture. Even widely distributed films such as *Atanarjuat — The Fast Runner*, which takes a traditional, epic Inuit story and adds new elements to translate it to the big screen, can be seen as a modern embodiment of what traditional storytellers would do as they provide their own interpretation and retelling of an ancient story (Krupat, 2009). Singer (2001) expounds on the significance of this new cinematic niche to both Native and non-Native peoples:

> Our films and videos are helping reconnect us with very old relationships and traditions. Native American filmmaking transmits beliefs and feelings that help revive storytelling and restore the old foundation. By making our own films, however, Native Americans threaten traditional practices of Hollywood filmmakers, who often advanced their careers by creating distorted and dishonest images of "Indians." (p. 2)

The importance of Indigenous-made productions goes beyond righting the record of stereotypes and falsehoods. Claiming space, agency, and authority in the media world helps realize a potential for Indigenous stories to serve a powerful function for their communities that connects the past to the present. In this act of cultural sovereignty and self-determination, traditional knowledge, philosophies, and worldviews are validated and reaffirmed, directly challenging both the colonial legacy of their suppression and the visual manifestations of racism in mainstream media. The growing number of Indigenous media makers is a testament to the value of this avenue of communication.

Some observers have expressed concerns about the limitations of video media to accurately represent the depth of exchange inherent in oral storytelling traditions and the potential problem of locking stories into one unchanging version (Knopf, 2010). However, many Indigenous people desire to utilize this tool, and therefore many are

reflecting on how best to do so. Claxton (2005), quoting Marjorie Beaucage, a key figure

in the dissemination of Native filmmaking in Canada, elucidates the continuity between

tradition and modern media, for

> the rhythm of the drumbeat and the language of smoke signals can be transformed
> to the airwaves and modems of our time. If we remain true to the values of
> traditional storytelling practices, we can use the new technology, without
> destroying the culture. (p. 19)

While Indigenous-produced videos are still at a relatively young stage, they are already

often realizing their potential in supporting sovereignty, self-determination, cultural

vitality, and protection of aboriginal territories.

Indigenous ways of knowing can be engaged via audiovisual storytelling in ways

that allow for Indigenous aesthetics and worldviews to assert themselves in the broader

media landscape unconstrained by Western aesthetic conventions and legacies of

colonialism. For instance, the internationally successful animated program *Raven Tales*

on the Aboriginal Peoples Television Network in Canada "works to mediate and

negotiate positive and powerful identities both within Native communities and against

non-Native power structures and ways of knowing, using the medium of film in particular

ways to gather strength and communicate cultural vitality" (Kisin, 2011, p. 132). The

series employs traditional motifs and stories while also eschewing essentialism and

primitivism. Given its popularity and accessibility to a large market, it would be easy for

the producers to feed into the stereotypes held by non-Natives. However it is clear from

the films that the artistic team behind the project feels a responsibility and accountability

to themselves, their communities, and the Indigenous youth who watch the show. Kisin

(2011) asserts that "while the myth time in Raven Tales is certainly made to speak to

Native youth about the time-depth and continuity of particular values, it does the very

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opposite of locating these values in some sort of primordial past: rather, their continued

relevance and coherence with the present are emphasized in their contemporizing and

above all animated quality" (pp. 134-135). Contemporary Indigenous visual media is

being expressed in a great variety of forms and in ways that show the depth and

complexity of storytelling traditions rather than simplistic stereotypes palatable to a

mainstream audience.

Performance and installation artists have also been drawn to storytelling and

audiovisual media created by Indigenous people. For example, Dana Claxton's

multimedia installations explore the sometimes volatile intersection of technology and

Native peoples. Gagnon (2005) asserts that her works, specifically *Waterspeak* and *The*

Heart of Everything That Is,

> evoke such collisions in their exploration of storytelling. . . . In their fragmented
> allusions to Lakota creation stories and relations to the earth, these installations
> reconfigure and reflect on well-trod tensions in the reception of Native art
> concerning traditional and contemporary practices. (p. 70)

Documentary and narrative audiovisual media formats generally lend themselves to a

straightforward examination of their narrative structures and an easy comparison to

traditional storytelling. It is the artistic license of more avant-garde and experimental

works that has great potential to enlist new modes of Indigenous expression and provide

fresh insights into existing ones.

Digital Storytelling in Indigenous Contexts

To understand the significance of digital storytelling it is important to examine the

centrality of narratives to the whole human experience. According to Boyd (2009), stories,

art, and play all provide a related social function and evolutionary purpose. Listening to a

story produces enjoyable feelings due to a dopamine release in the brain, suggesting that

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our biology has evolved a proclivity for storytelling because it has helped us to thrive in our variety of ecological niches. He posits that, while play can be seen as facilitating the repetitive practice and honing of a skill such as hunting, storytelling can be seen as a crucially important mechanism for the transmission of information and generational wisdom needed for subsistence.

Commenting on the influential Anishinabe writer Gerald Vizenor, Richardson (2012) states that in his works the "idea that all of language can be deployed figuratively speaks to the centrality of narration and the literary nature of human existence" (p. 671). Within American Indian narrative tradition are precepts that foster nonhierarchical, reciprocal relations between humans and animals, as opposed to Western scientific and religious orderings of the world. The use of trickster characters emphasizes the comic, creative and transformative force of narratives. Ethical relationships between humans and the rest of the natural world are reinforced through a process where "the self is de-stabilized and critically re-situated toward responsibility" (hyphens sic; p. 672). Narratives in Indigenous cultures contain embedded social–ecological ethics that guide a people who are closely tied to their local environments and who have often learned through experience what takes place when a sustainable relationship is overlooked or neglected. An ethnographic study of Mayan agriculturalists in Guatemala illustrated how the oral tradition of storytelling about maize fostered a sense of shared identity and sense of place (Huff, 2006). The relationship to land and the foods derived from the land that sustain them are central to Indigenous peoples' culture and lifeways.

As environmental threats to the territories and aboriginal homelands of Native peoples continue to be pressing issues, storytelling remains a vitally important component

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of survival. Sium and Ritskes (2013) argue that "storytelling and Indigenous land are both part of the sustaining and resurgence of Indigenous life and are not easily separable. . . . The land is more than a backdrop, space, or a location; it is a sustainer, speaker, and archive for Indigenous stories" (pp. vi-vii). As part of a 500-year history of resistance to colonization, including contemporary struggles against settler colonialism, capitalism, and neoliberalism, storytelling has been both a site of survival and a tool for survival. Even when colonial violence suppressed and extinguished other forms of resistance, "the storytellers and griots have never been idle, working through participatory mediums to maintain and sustain Indigenous ways of being and living" (p. v). So while direct acts of physical resistance may have been phased out due to the overwhelming military power of colonial forces or other factors, the storytellers have kept Indigenous culture alive. Sium and Ritskes further maintain that due to the agentic and participatory nature of storytelling, "stories are open-ended processes for speaking reclamation and resurgence, dialogue and contestation, they are part of a cycle of renewal and re-creation" (p. viii). In the modern context, renewal and re-creation involve utilizing a wide variety of media forms such as literature, comic books, films, songs, and video.

Digital storytelling is a kind of video production that has become popular with the advent of home-computer-based editing and production software and online venues such as YouTube and Vimeo. The product is generally short in length (3-5 minutes typically) and may be as simple as a montage of still photos and a voiceover (Palacios, 2012). Piner (2011) has found through the Northern Arizona University–based Intergenerational Digital Storytelling Project, *A Basket Full of Stories*, that digital storytelling can be a valuable tool for documenting and disseminating aspects of Indigenous history and

culture. Indigenous ecological knowledge, epistemology, and ontology are embedded and intertwined in both traditional stories and contemporary ones told through video formats.

As with other forms of Indigenous-made videos, digital storytelling can trace its ancestry to traditional narrative forms. Palacios (2012) argues that "like its mother, traditional oral storytelling, digital storytelling can foster liberation from the dominant socio-cultural world that continues to marginalize the marginalized. By creating the digital story, the storyteller has control over what is important to tell" (p. 47). Documenting local Indigenous knowledge via the visual storytelling medium brings oral storytelling traditions into the twenty-first century. While there is arguably the possibility for the knowledge embedded in the stories to stagnate due to the fixed nature of the media formats[7] as opposed to the interactive and adaptive fluidity of the oral tradition, the videos can remain valuable as a reference point for how cultures have evolved to reflect the changes of the present time, allowing a knowledgeable viewer to compare and contrast their contemporary reality with that of the past (Lino, 2012). This modern format carries with it a connection to an ancient lineage while giving those who utilize it the means to tell their own stories and reach larger audiences than in the past, when Indigenous ways of knowing were excluded from the canon of environmental studies.

Digital storytelling has the potential to disrupt power imbalances that have favored the hegemony of dominant forces in societies. Couldry (2008) suggests that

> digital storytelling challenges media's normal concentration of symbolic
> resources so markedly . . . it cannot be ignored because of the possibility that
> digital storytelling is part of a wider democratization, a reshaping of the

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[7] This could potentially be addressed with emerging web-based nonlinear digital storytelling and authoring platforms that can create media more dynamic than a DVD or YouTube video, though it remains underexplored in Indigenous contexts. See http://web2storytelling.wikispaces.com and http://scalar.usc.edu/showcase/dna-seven-interactive-essays-on-nonlinear-storytelling/

hierarchies of voice and agency that characterize mediated democracies. (pp. 383-384)

He highlights the vision of Lambert (2006), who has done much to promote and document the growth of digital storytelling, that this practice will create broader distributions of power in the societies in which we live, for as these societies have become increasingly mediated, they have also become increasingly unequal. While digital storytelling can start as a local practice of creating, sharing, and archiving stories, the hope is that wider networks and habits will develop. It is a powerful technique, with great potential, that can be utilized in service of building bridges of understanding between divides such as generations or ethnicities, as well as being valuable for activist organizing and education.

The benefits of digital storytelling practices for minoritized students in the realm of education have been shown to be multifaceted. Benmayor (2008) found digital storytelling to be an empowering collaborative process that engaged marginalized college students, primarily identified as Latinos/Latinas (who it should be noted often have Indigenous backgrounds) but also other ethnicities, unlike anything she had experienced in 30 years of teaching. Instead of technology being alienating, it became an equalizer as most students were at the same general skill level and through teamwork helped each other in the process of creating their works. She found that

> Digital storytelling is an assets-based pedagogy where students can bring their own cultural knowledge and experience to the fore, including their skills and comfort with technology, to transform their thinking and empower themselves. The multiple creative languages of digital storytelling — writing, voice, image, and sound — encourage historically marginalized subjects, especially younger generations, to inscribe emerging social and cultural identities and challenge unified cultural discourses in a new and exciting way. As a hybrid form, digital storytelling mirrors and enables the conceptual work of constructing new understandings of identity and places of belonging. (p. 200)

By giving students tools to become theorizers of their own historical and cultural experiences, digital storytelling in learning environments could become an avenue for cultural vitality through expression and reflection, while also actively supporting a sense of place. The social and spatial location in which a student is situated becomes a terrain rich for exploration and exposition. Palacios (2012) concurs that "the very nature of digital storytelling . . . lends itself to provoking deep reflection, which may lead to a transformative action" (p. 48). These transformative actions can be intrapersonal or occur at a larger social level. Skouge and Rao's (2010) research has similarly shown that reflection and action are motivated not solely by the intention of moving the viewing audience, but also come from the effect on the producers and subject of a digital story.

In addition to benefits in the classroom, audiovisual media have been used as a collaborative community-based methodology for research on health and environmental issues in Indigenous communities. Palacios (2012) suggests that

> as a research approach that is culturally aligned to Native oral traditions, digital storytelling holds potential for great success . . . as it provides a route, rooted in traditional oral storytelling that legitimizes an American Indian epistemological and ontological view of the world. (p. 51)

A project with a rural California Native community — the Round Valley Indian Reservation — used digital storytelling to identify problems with food security and access to healthy foods (Blue Bird Jernigan et al., 2011). Lino (2012) studied the use of filmmaking for health and environmental education purposes in two Anishinabe communities: Batchewana First Nation and Pic River First Nation in Ontario. She found that not only does film engage students' senses and provide a medium that they are more likely to partake in than reading; it also gives them a visual representation of the content being discussed, including the ability to capture the essence of a person through the

unspoken language that cannot be portrayed in literature or audio recordings, while providing a sense of intergenerational connection and identification as community adults impart health and environmental knowledge. The film created in her case study served as both a tool for ethnological insight for academics to holistically understand Indigenous perspectives on issues they face and, even more importantly, as a tool to preserve traditional knowledge for future generations in a community. Many of the participants she interviewed acknowledged that, because of their Indigenous backgrounds, they have traditionally been storytellers, and that filmmaking provides them the opportunity to express themselves as knowledge holders in a modern fashion. They felt it should be used to preserve their history, as well as making learning processes in the community more participatory. Similarly, Scott's (2006) research in a remote Native community in British Columbia found that participants were enthusiastic about activities that used technology in innovative ways to support a culturally relevant community-based educational initiative. That study showed correlations between the students' involvement in multimedia projects and their health.

Digital storytelling–based research projects can have lasting positive impacts in an Indigenous community when the people are empowered to continue utilizing the practice and opening up opportunities for taking ownership of the documentation and distribution of their knowledge. Cunsolo Willox et al. (2013) found that narrative and story-based digital methodologies are especially beneficial and respectful strategies for conducting research in an Indigenous context. Following the groundwork laid out in the authors' collaborative research project, the Rigolet Inuit Community Government in Newfoundland and Labrador Province established the My Word: Storytelling and Digital

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Media Lab — the first center for digital media and community-engaged research and

capacity development in that far northern region of North America. Its mission is to

promote and facilitate research by and for Inuit people. In the course of the project they

discovered that the Western form of narrative in digital storytelling does not always align

with Indigenous forms of storytelling, where stories do not necessarily have a neat ending.

Nevertheless, people of all ages found this an excellent platform to unite oral storytelling

with digital technology. They stressed that it was important to ensure that all participants

and the community at large are comfortable with audio and video recordings and are fully

informed of their expected use. The authors assert that

> digital storytelling can be a participant-led and participant-created story-based
> data-gathering strategy, which begins to address the limitations of interview-based
> narrative research, the issues of colonization of research, and the Western analytic
> project; it is also a strategy that simultaneously understands the need for
> indigenous communities to take control of the research process and to create their
> own research platforms, in their own voices, sharing their myriad, rich, and
> nuanced lived experiences. (p. 130)

This modality has great potential for advancing Indigenous research methodologies. This

potential also reaches beyond the academy and even the local community, because

> the digital stories created transcend the boundaries of research and academic
> institutions; the stories themselves move beyond merely a form of data to be
> analyzed (although they are indeed fruitful and fecund sites of analysis) and
> become digital narrative opportunities for individuals around the world to
> encounter the stories, voices, lives, and experiences of people with whom they
> may not otherwise interact or have contact. (Cunsolo Willox et al., 2013, p. 142)

The penetration of internet communications to communities as remote as Rigolet

demonstrates the possibility for digital stories to be shared with other Indigenous

communities, as well as the non-Indigenous world, while also remaining a valuable part

of a community-engaged research strategy that can readily incorporate aspects of an

Indigenous research agenda, as outlined by Smith (1999). Features of such an agenda are

research that is community centered, conducted by Indigenous researchers, employs methodologies reflective of the concerns and epistemology of the researched, and advances the well-being of the community.

<center>Digital Media, the Arts, and Environmental Education</center>

In this digital age it would seem to make sense that environmental education practitioners would embrace all potential tools available. However, perhaps due to the implication of electronic media in "nature deficit disorder" (Louv, 2008) and a "videophilia" resulting in, for example, decreased time spent in national parks (Pergams & Zaradic, 2006), there appears to be a slow acceptance of digital media in the field. This is also supported by the small amount of literature on the subject.

The realm of media is an area in which environmental education can potentially achieve a greater depth and fostering of agency, both of which are particularly germane to dealing with social–ecological issues of justice. McKenzie (2008) argues that environmental education research should open up to examining intersubjective spaces in addition to places of learning:

> we can also add discomforting testimonial novels, films, or other experiences that provoke us to consider the "difficult knowledge" of our implicatedness in various social and ecological issues; poetic and aesthetic experiences; the locations of hybridized knowledges and multiple identities and communities in the "contact zones" of the already globalised portions of the world; or uses of irony and parody, fabulation and fiction, popular culture, architecture, or media. (p. 366)

Of particular interest are the spaces of youth culture where many young people are expressing their identity in ways that are fostering sustainability and socio-cultural change (McKenzie, 2008). Stables (1998) suggests that environmental education should be evaluated on its ability to foster functional, cultural, and critical environmental literacy. The concept of ecopedagogy as offered by Kahn (2010) includes a critical

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"technoliteracy," particularly with respect to multimedia, as being essential in modern times where electronic media is an almost inescapable aspect of human culture, even in the most remote parts of the world. This literacy includes the ability to respond effectively to these multiple modes of electronic communication, whereby interpretation and critique leads to agency and resistance to hegemony.

> People should be helped to advance the multiple techno-literacies that will allow them to understand, critique, and transform the oppressive social and cultural conditions in which they live, as they become ecoliterate, ethical, and transformative subjects as opposed to objects of technological domination and manipulation. (Kahn, 2010, p. 78)

The intersection of media and environmental education is an area that holds promise for advancing both practice and research, especially in regards to difficult and complex issues of social and environmental justice.

Farnsworth (2011) suggests that conservation photography is closely linked to a critical pedagogy of place and should be examined more closely for its potential to inform environmental education practices by allowing for a unification of "visual, geographic and cultural literacies" and inspiring a cultural predisposition toward protection of the environment. Similarly, Tsvereni's (2011) study of urban school children demonstrated that a critical approach to environmental education using storytelling, photography, and environmental drama in an urban planning project successfully engaged students and fostered a sense of environmental stewardship.

Digital storytelling for educational purposes is a relatively recent phenomenon. The use of film viewing in general educational settings has been shown to be highly effective for engaging students (whether or not they are "media literate"), as both they and their teachers live in a media-saturated environment (Bluestone, 2000). Sadik (2008)

conducted an empirical study on the use of digital storytelling in a classroom and found it to be an effective learning tool that advances curricular goals. Drawing upon an extensive background as an educator and digital media proponent, Ohler (2013) finds several benefits in the classroom from the use of digital storytelling. In his experience it engages students in literacy (emergent and traditional), promotes creative and critical thinking, develops transferable planning skills, and allows students to pursue academic content in their own language as "digital natives."

Some practice-based research studies are showing the utility of digital media in environmental education settings. It is important to note Thomashow's (1995) assertion of the key role of affective and experiential learning, as well as narrative, in the development of an ecological identity.

> And it is always helpful to construct symbolic, artistic, and experiential learning approaches as means for collective storytelling. For after all it is the stories of environmental experience that link people together. Through these stories, people recall memories and impressions of nature, and unlock the basis of their values and commitments, perhaps revealing a new interpretation, in conjunction with the stories of their colleagues. (p. 7)

Storytelling and narratives can play an important role in the development of environmental identity (Clayton, 2012) and environmental activism (Matsuba and Pratt, 2013). Audiovisual media production and storytelling as part of environmental education pedagogy demonstrate potential for developing environmental consciousness (Corwin, 2010; Harness & Drossman, 2011). Roberts's (2011) case study of a UK university's undergraduate students' field class in Uganda demonstrated the usefulness of video diaries within a sustainability education framework. This study showed that the video diaries were more successful than written reflective accounts for capturing not only "students' understandings of equity, environmental justice and their status as global

citizens but also their ethics, values, and social, cultural, economic, psychological and

scientific understandings" (p. 686). Digital media were shown to be highly useful in an

environmental education program for Maori youth that explored the relationship between

culture and land. An arts-based research methodology was used to examine the deep

connections between the students and their orientation to their environment (Kidman,

2009). The literature in this area is still emerging, but at this point it suggests real benefits

for the comprehension of environmental education topics and the exploration of students'

critical consciousness and subjectivity through the use of digital media and narrative.

A wide variety of new media technologies are beginning to be explored by

environmental education practitioners. Blewitt (2011) stresses that educators need to be

> mindful of the largely unrealized pedagogic capacity of new and old media to
> promote more sustainable practices through fashioning new modes of engaged
> learning and connective understanding. This requires critical environmental
> educators to become media researchers and even media ecologists as the media is
> unarguably an important element of our produced environment, our produced
> (human) nature and all of our futures. (p. 731)

Virtual communities have been cited for fostering pro-environmental behavior through

online social learning (Robelia, Greenhow, & Burton, 2011). Internet distribution of

environmental multimedia is becoming an important component of informal

environmental education in the 21st century (Shoemaker, 2007; Harness & Drossman,

2011). Fauville, Lantz-Andersson, & Säljö (2014) make a case for environmental

education being an appropriate setting into which internet communications technology

tools can be integrated to support critical and action-oriented, problem-based

instructional practices. They give examples of several digital applications and web sites

such as Google Earth, virtual museums, E-Junior, a virtual ecological pond, video

podcasts, and virtual environmental field trips that are being used with positive results in

environmental education programs. They also highlight the pervasiveness of mobile phone technology and its potential use for environmental education, particularly to increase students' awareness of their local area. These authors cite a study by Uzunboylu, Cavus, and Erkag (2009) that showed that use by college students of readily available mobile phones increased awareness of local environmental blight. Environmental educators are increasingly finding ways to leverage developments in media technology to serve educational goals.

<div align="center">Aesthetics and Environmental Ethics</div>

Iozzi (1989) argues that the key entry point for environmental education is via the affective domain. Thus it is worthwhile to consider the realm of aesthetics and ethics. One of the prominent authors in environmental aesthetics, Allen Carlson, has noted that coincident with the development of the field of ecology has been the articulation of positive aesthetics, which posit that the natural world is aesthetically good because it exhibits qualities of unity, harmony, and balance (Carlson, 1984). Viola Cardova (2004), the first Native American woman to earn a Ph.D. in philosophy, argues that Native worldviews share this same point of view:

> For the Native American there is not, nor can there be, a distinction between esthetics and ethics. The universe is a good thing — the goodness is inherent in the fact that the moving, living universe operates on the principles of balance and harmony. The human being, a part of that universe, also holds to those principles. In art and in life the role of the human is to maintain balance. But balance, again, is not stillness, it cannot connote anything static. (p. 254)

Humans must not only appreciate beauty but also feel a duty to protect it, nourish it and contribute to it — this is how balance is maintained in an active rather than static manner. Just as Indigenous people, broadly speaking, share similar philosophies about a *relational ecological aesthetic* that often, but not always, informs a desire to protect species,

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ecosystems, and the environment at large, some environmental aesthetics philosophers

feel that an aesthetics-based approach makes the strongest arguments for environmental

protection and conservation (Carlson, 2012; Hogue, 2010).

Though early Western aesthetics theorists discussed concepts of beauty and "the

Good" with religious overtones, in the time since then, "the divorce of spirituality, beauty,

and ethics from Western aesthetics contrasts with the continued interrelationship of these

in indigenous aesthetics" (Leuthold, 1998, p. 202). Colorado (1988), drawing from the

work of Deloria, states "the broader Indian idea of relationship, in a universe very

personal and particular, suggests that all relationships have a moral content" (p. 52).

Aesthetics is intertwined with ethics in most Indigenous worldviews, and arguably for

many non-Indigenous environmentalists it is the emotional factor and personal

connection to nature that drives their sense of ethics rather than logical arguments.

While Carlson (2012) emphasizes the centrality of scientific knowledge for a full

aesthetic appreciation of nature, Brady (1998) finds this idea to be limiting in several

ways, and to carry with it the danger of conflating the scientific and the aesthetic. She

argues that perception and imagination are the central characteristics of the aesthetic

appreciation of the environment. The benefits of this paradigm are where

> ampliative imagination leads to the discovery of an *aesthetic truth* . . . invention
> stretches the power of imagination to the limits, and this often gives way to a kind
> of truth or knowledge about the world. . . . A kind of truth has emerged through a
> distinctively aesthetic experience." (p. 144; emphasis in original)

Sojourns in wilderness and sacred sites to gain insights into truths, perhaps akin to this

idea of aesthetic truths, were a key component of traditional Indigenous lifeways and

epistemologies and continue to be practiced by those who seek to perpetuate Indigenous

culture through connection to particular places (Cajete 1994). Carlson (2012) does

acknowledge that "what is often called a sense of place, together with ideas and images from folklore, mythology, and religion, frequently plays a significant role in individuals' aesthetic experience of their own home landscapes."

<center>Environmental/Ecological Literacy and Identity</center>

Ecological literacy and environmental literacy are closely related terms, as are ecological and environmental identity; however, they are not entirely synonymous. Orr (1992) is credited with coining the term *ecological literacy*, which is defined as the ability to read the natural world and understand the interconnections therein. Drawing upon their work with the Noongar Aboriginal people, Woolhorton and Bennell (2007) emphasize that it is not a new concept, as it has been practiced by many societies who have an intimate relationship with their land. Mitchell and Mueller (2010) build upon Orr's definition by incorporating the concepts of biophilia and eco-justice. They suggest it "encompasses pragmatic experiences, cultural tradition, community, morality, ecological knowledge, and the acknowledgement of ecological relationships" (p. 215) and can be reinforced through shared experiential learning that empowers students to be decision-makers about environmental issues. The North American Association for Environmental Education (2011) focuses on the concept of environmental literacy, building upon 25 years of literature that has sought to define it in their publications on excellence in environmental education.

> An environmentally literate person [is defined as] someone who, both individually and together with others, makes informed decisions concerning the environment; is willing to act on these decisions to improve the well-being of other individuals, societies, and the global environment; and participates in civic life. Those who are environmentally literate possess, to varying degrees:
>
> - the knowledge and understanding of a wide range of environmental concepts, problems, and issues;

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- a set of cognitive and affective dispositions;

- a set of cognitive skills and abilities;

- and the appropriate behavioral strategies to apply such knowledge and understanding in order to make sound and effective decisions in a range of environmental contexts (pp. 2-3 – 2-4).

Ecological literacy emphasizes knowledge of nature, whereas environmental literacy has a broader focus that includes ecological knowledge. However with the inclusion of eco-justice in Mitchell and Mueller's (2010) definition, the lines of distinction are not necessarily exclusionary. Ecological and environmental identity definitions also share similar distinctions and overlap. Kempton and Holland (2003) describe a "social environmental identity," which is a person's self-definition in relation to a general identity as an environmentalist or a specific member of an organized group. They assert that there are three interwoven components of this identity development that include growing knowledge and awareness of the natural world and environmental problems, an identification with their sense of agency to effect change on environmental issues, and knowledge that is gained through learning how to take action while also interacting with others in that process and learning from them. Nonformal environmental education groups such as after-school and summer programs are key cultural spaces for the development of this kind of identity (Williams & Chawla, 2015). Thomashow (1995) defines an "ecological identity" as one that is comprised of "all the different ways people construe themselves in relationship to the earth as manifested in personality, values, actions, and sense of self" and "is reflective of a person's cognitive, intuitive, and affective perceptions of ecological relationships" (p. 3). Significant life experience (SLE) research has highlighted the importance of direct engagement with the natural world,

such as childhood nature play, adolescent recreation and exploration, as well as gardening, hunting, and fishing, in the development of an environmentally connected identity (Williams & Chawla, 2015).

Longitudinal SLE research, it is argued, due to the holistic nature of environmental identity development, should take into account the entirety of an environmental education program rather than just one or two significant events (Williams & Chawla, 2015). Liddicoat and Krasny (2014) have found that vivid memories associated with environmental learning and changes in behavior can persist long after participation in a program, and can be connected to both personal and social aspects of identity.

> The self function of recalling positive experiences and events that give a sense of continuity to one's life may relate to a person's desire to preserve one's home environment or a natural space to which one has a strong personal connection. The self function of reviewing situations in which one was successful or met a personal goal may relate to self-confidence and a sense of empowerment when pursuing environmental goals. The social functions of sharing memories to strengthen social bonds or establish connections with new acquaintances may support formation and participation in communities that have the potential to take collective environmental action. (Liddicoat & Krasny, 2014, p. 191)

These types of memories serve an important function in the development of an environmental identity. They strengthen the connections people have to the places that have strong personal meaning for them, while also reinforcing their agency and social connections. The authors note the social-interactions component of their study as being highly significant for generating positive memories and suggest that environmental education practitioners take this into account in the development of their programs.

Stapleton (2015) finds in her study of a youth environmental group that "participation and action in environmental activities as well as recognition as an

environmental actor have the potential to further environmental identity development" (p. 107). Recognition by each other and their community as being concerned about and willing to take action on environmental issues was a key factor in fostering an environmental identity among those youth. The author also argues for an expansive and inclusive concept of environmental identity, particularly when issues of race and class are taken into consideration. There is a link between a concept of environmental identity that accounts for these factors and environmental literacy. Cermak (2012) calls for a "Critical Environmental Literacy" which he defines as a process that uses "*reading and writing to create messages that question, confront, and reconfigure how environmental problems are constructed by one's own overlapping racial, cultural, and economic power relations*" (p. 197, italics in original). Cermak used hip hop for four years in his environmental science classroom as a means for minoritized students to connect with environmental concepts through the lens of a familiar cultural reference point. His message for environmental educators is

> This student-to-student transmission of environmental knowledge is a crucial step in mitigating the potentially problematic role of cultural insensitivity in environmental education, and one that allows texts to grow organically. . . . When students hear how their peers have connected environmental and social issues using real places and events in their community history, relevance and synchrony, both cultural and ecological, are heightened in the classroom. The culture of hip-hop, at its ethos, is about connecting people to their history through creative remixing of standard ideas so they can be inspired to take informed action. (Cermak, 2012, p. 202)

By connecting environmental literacy with social and cultural aspects of students' experiences, environmental identities are fostered that can lead to action. As the field of environmental education continues to expand with a greater diversity of perspectives and

a growing attendance to issues of justice for minoritized peoples, so too will definitions of environmental/ecological literacy and identity.

<div align="center">Multicultural Environmental Education</div>

Background

Marouli (2006) traces the evolution of environmental education from its origin as a science education rooted in nature and conservation studies. The emergence of the environmental movement added social and political dimensions to environmental problems, but environmental education remained primarily rooted in natural science. Marouli asserts that emergence of "education for sustainability/environmental education for sustainable development" was a paradigm shift that had significant implications for both content and pedagogy. As a result, social-cultural contexts, historical events and relationships, economics, and political forces as well as ecology would need to be taken into account in planning for a sustainable future.

> A sustainable future implies a sustainable environment capable of maintaining the diversity of life; a sustainable economy based on wise and equitable use of resources[;] and a sustaining society whose lifestyle, aspirations and values are in harmony with the natural environment. (Kakabadse, 1998, p. 107, quoted in Marouli, 2006, p. 27)

There is no universally accepted definition of sustainability. However, UNESCO (2015) has provided guidelines for what the content and aims of education for sustainable development should include. Some key issues that they recommend to include are climate change, disaster risk reduction, biodiversity maintenance, environmental injustice, cultural diversity, gender inequality, and sustainable consumption of resources. The foundational Tbilisi Declaration, which was the culmination of the world's first intergovernmental conference on environmental education, recommends adoption of

teaching approaches that help develop awareness and concern about the total environment and provide the "knowledge, attitudes, motivations, commitments, and skills to work individually and collectively toward solutions of current problems and the prevention of new ones" (UNESCO, 1978, cited by Umholtz, 2013).

Umholtz (2013) describes an education for sustainable development program model that integrates the environmental theories and pedagogical models that would best enable marginalized, alienated youth to reach the standards set forth in the UNESCO definition and would also promote positive youth development. This educational program has as its foundation place-based pedagogy and social constructivist approaches to teaching and learning. In a report prepared for the Place-based Education Evaluation Collaborative, Duffin, Chawla, Sobel, and PEER Associates (2005) describe this type of model as using environment as an integrating context across disciplines. "It is characterized by interdisciplinary learning, team teaching, hands-on-learning experiences that often center on problem-solving projects, learner-centered education that adapts to students' individual skills and abilities, and the exploration of the local community and natural surroundings" (Duffin et al., 2005). It is important to note that the communities in which minoritized youth live have distinct cultures and issues of environmental injustices that need to be accounted for.

The North American Association for Environmental Education (NAAEE) has a series called Guidelines for Excellence in Environmental Education, but the publications only briefly mention issues pertaining to culture and justice. *Nonformal Environmental Education Programs* (NAAEE, 2009) offers two suggestions for addressing target audiences: that their

cultural perspectives, needs and interests . . . have been identified, understood, accommodated, and addressed in program development and activities . . . [and that] the program seeks to be inclusive and promotes a multicultural experience. It is sensitive to the culture, ethnic background, and gender of the audience. (p. 15)

The publications Guidelines for the Preparation and Professional Development of Environmental Educators (NAAEE, 2010b) and Excellence in Environmental Education: Guidelines for Learning (K-12) (NAAEE, 2010a) are careful to stress that environmental education is a process of informing students about all sides of an issue and is not advocacy. This is not surprising, given the contentious history of environmental education in the United States, with accusations of it being activism masked as schooling.

These guidelines do articulate basic standards for students to learn certain concepts in topic areas that potentially connect to justice issues. Examples are "Humans and Their Societies," which touches on culture and global connections, as well as change and conflict; "Decision-Making and Citizenship Skills," with goals of learners developing the ability to articulate and justify their own views, as well as to plan and take action on environmental issues consistent with a notion of citizenship; and "Personal and Civic Responsibility" (NAAEE, 2010b). It is clear that there is a sense of ethics guiding this vision of environmental education; however, it does not explicitly and substantively address issues of power, privilege, and oppression.

Direct engagement with these issues comes from a Canadian initiative (Learning for a Sustainable Future, 2011; NAAEE, 2010a). In an appendix discussing the knowledge, skills, and values or attitudes needed for environmentally sustainable development, part of their list of values is:

A sense of self-worth and rootedness in one's own culture and community.

A respect for other cultures and a recognition of the interdependence of the human community.

A global perspective and loyalty to the world community.

A concern for disparities and injustices, a commitment to human rights, and to the peaceful resolution of conflict.

At present NAAEE is developing new guidelines to address the growing urbanization of the North American population, as well as to deal with cultural diversity issues, though it remains to be seen to what extent the concepts of power, privilege, oppression, and justice will be critically engaged within a framework that is careful to give a sense of neutrality on controversial issues. Agyeman (2006) argues that experience and technology shape action in the context of environmental education pedagogies. He calls for research in this field to examine the intersection of race, power, and culture with action, experience, behavior, and technology in a way that emphasizes empowerment and cultural sensitivity rather than notions of under-representation. With this in mind, he posits the possibility of a much-needed paradigm shift in environmental education research.

As many community-based environmental education programs that serve minoritized populations articulate the importance of *empowerment*, it is worthwhile to examine the concept. Many scholars have discussed empowerment and its constitutive elements, but there is no consensus on a comprehensive descriptive model. Fundamentally (and etymologically), empowerment relates to issues of power (Nikkhah & Redzuan, 2009). Conventional psychological frameworks discussing empowerment emphasize self-esteem, self-efficacy, self-worth, competency, and locus of control (Zimmerman, 1990; Perkins & Zimmermann, 1995). Anme (2009) argues that

empowerment is a process of reducing powerlessness and dependency through gaining increased control of an individual's life. Empowerment and self-determination allow an individual to make meaningful decisions, thereby enhancing personal motivation and well-being (Prilleltensky et al., 2001).

However, other scholars look beyond the individual and take into account the social realm. Rissel (1994) emphasizes a concept of empowerment located at both individual and community levels, whereby a psychological sense of empowerment functions simultaneously with participation in collective political action. Some authors argue that individual and community empowerment are not neatly divided but exist in dynamic relationship with one another (Rappaport, 1987; Wallerstein, 1992; Bergsma, 2004). Nikkhah and Redzuan (2009) argue that community empowerment entails two components: improvement of the quality of life of community members, and involvement of all members of the community in the active process effecting change.

White (2004) suggests that concepts of empowerment are at best incomplete, due to some scholars failing to connect the social orientation of personal decision-making and participation. Attempting to examine and assess empowerment within a community can be problematic (Laverack & Wallerstein, 2001). Mohajer and Earnest (2009; 2010) argue that assessments of programs that promote empowerment are highly subjective. Perkins and Zimmermann (1995) contend that empowerment processes and outcomes can vary significantly, as no one metric can account for the diverse meanings in varied contexts and populations. As this study is focused on situations involving youth and young adults, it is important to note the assertion of Cargo et al. (2003) that youth empowerment emerges from a dynamic and transactional process between adults and youth, with

various subprocesses having feedback loops within and between them. Lisbeth's (2010) research finds that processes of belonging are important for youth to build self-esteem and self-efficacy, while opportunities for creativity, civic engagement, and being listened to are also significant factors.

Critical Pedagogy

Among scholars and educators a growing number have adapted Freire's human-centered ideas to a form of environmental education that critically engages nature and the nonhuman environment in a much more radical way than mainstream discourses. Though they all have their own particular emphasis, whether articulated as a "critical pedagogy of place" (Gruenwald, 2003), "ecosocialist critical pedagogy" (McClaren & Houston, 2004), "ecojustice pedagogy" (Bowers, 2001; Jucker, 2004), or "ecopedagogy" (Kahn, 2008, 2010), these frameworks all share a commitment to the creation of learning opportunities for people to critically interrogate issues of power and privilege, act upon issues of environmental justice and ecological justice,[8] preserve cultural traditions regarding human-nature relationships, and foster intercultural dialogue, respect, and cooperation. While it has been pointed out by Bowers (2001) as well as others (Gur-Ze'ev, 2005; McClaren & Houston, 2004) that Freire and the critical pedagogy tradition have been silent on environmental issues,[9] his influence on Fourth World,[10] Third World, and First World educators is substantial and informs most of these liberatory-minded articulations

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[8] Though these terms sound similar, McClaren and Houston (2004), building on the thinking of political ecologists Low and Gleeson (1998), make the distinction that environmental justice addresses unequal distribution of harmful environments among people, while ecological justice is the idea of justice toward nature.

[9] Some authors say that he was working on a manuscript related to environmental issues when he passed away.

[10] A term coined by Secwepemc (Shushwap) Chief George Manuel to refer to the Indigenous people and territories of the world. For more see Hall (2003).

of environmental education. Bowers's basic criticism of critical pedagogy is that it reinforces Western values and principles. He expresses concern that critical pedagogy makes critical reflection the only "legitimate source of knowledge and authority" and that the emphasis on dialogue "shifts the locus of authority from that of community and tradition to the individual" (Bowers, 2001, p. 129). This shift from collective concerns to the individual has led to the failure of critical pedagogy to address the issue of environmental degradation. Bowers does concede that critical pedagogy can be a useful framework for people under colonialism and other forms of oppressive relationships. Regardless if one agrees with the critiques or not, it is important to acknowledge the influence of the Freireian tradition on multicultural and justice-minded approaches to environmental education.

Umholtz (2013) posits that a critical pedagogy of place is necessary for marginalized, alienated youth to reach an understanding of their environment and to have the skills needed to engage in actions to change environmental problems. Place-based education that incorporates a critical framework fosters students' capacities to "reinhabit" their environments, developing the connections, relationships and commitment that could lead to action. Critical pedagogy enables students to become aware of the power structures that shape their world and to reject unjust practices in favor of more just and sustainable ways of being in the world — a "decolonization" process that is needed in environmental education (Gruenewald, 2003). Marouli (2005), however, would see this environmental education model as incomplete and unlikely to produce a full understanding of environmental injustice issues without a multicultural education component. She sees multicultural education as not only increasing access to

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environmental education for marginalized people and providing a more relevant curriculum, but also as including diverse perspectives and marginalized ecological knowledge, thereby increasing sense of place and commitment to action.

Foundations

In the United States, Gigliotti (1990) was an early critic of mainstream environmental education for neither meeting the needs nor addressing the issues of people of color. Environmental education has also been critiqued for focusing too heavily on biophysical sciences and ecology, as well as studies about exotic environments that urban students were unlikely to encounter (Marouli, 2002). Despite the theoretical inclusiveness and cultural "sensitivity" articulated within mainstream discourse around environmental education, educators in the 1990s who sought to address issues relevant to urban and multicultural audiences found there to be a dearth of resources as well as representation (i.e. educators of color) in the environmental field (Lewis & James, 1995; Bryant, 1996; Taylor, 1996). Early theorizers such as Running Grass (Running Grass & Weitraub, 1996) drew from experiences of the environmental justice movement, critical pedagogy, and general multicultural approaches to education in crafting environmental education for participants of color (Marouli, 2002).

There can be significant variation in the philosophies and activities of culturally competent environmental programs, ranging from simple outreach and accommodation efforts of traditional environmental education groups for people of color, to programs that facilitate grassroots autonomous social learning and action in marginalized communities facing environmental racism to cross-cultural partnerships. Marouli (2002) identifies several different conceptualizations of multicultural environmental education:

Multicultural Environmental Education has been interpreted in several ways. It has been understood as: environmental education which works with culturally diverse groups; or, as a way of working with mainly ethnic minorities in order to empower them to realize and claim their environmental rights; other times, as a way of culturing the environment and a way of promoting cultural diversity in the content of the environmental education programs; or finally, as a pedagogy which promotes cross-cultural understanding, respect, and cooperation on environmental issues. There is no consensus on its meaning. (p. 38)

Running Grass and Agyeman (2002) state that at the core the structuring, delivery, and content of environmental education are civil rights issues because they are about a lack of access to an educational resource.[11] Diversity in environmental education practice and research remains an issue of concern in the field (Andrzejewski, Baltodano & Symcox, 2009; Zandvliet, 2009).

Environmental education and contact with nature has been shown to have a number of benefits for students, including improved cognitive functioning and academic performance (Strife & Downey, 2009). Access to this resource is particularly important for low-income youth of color who, in addition to being exposed to more environmental health hazards such as pollution, have disproportionately less access to nature and green spaces (due to proximity, safety issues such as gangs being active in parks, and a general "ecophobia" that plagues many urban youth). Athman and Monroe (2004), in a mixed-methodology study using pre-tests and post-tests on 9th and 12th graders from 12 urban and rural schools in Florida, examined the relationship between environment-based education programs and achievement motivation. They found that, controlling for GPA, gender, and ethnicity, there was a significant positive effect on critical thinking. Bartosh (2004) examined the impact of environmental education on student achievement in

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[11] The framing for Indigenous communities can be seen somewhat differently due to sovereignty vs. citizenship perspectives, treaty rights to educational resources instead of civil rights, etc., though both perspectives are fundamentally about justice and are therefore arguably more similar than not.

traditional school subjects and on standardized school tests. He compared schools that

had integrated environmental education into the curriculum with those that had not. The

students took two standardized achievement tests employed by Washington State to

measure basic skills in mathematics, reading, writing, and listening. "Schools that

undertake systemic environmental education programs consistently have higher test

scores on the state standardized tests over comparable 'non-EE' schools" (Bartosh, 2004,

p. i).

Environmental education that emerges from and serves minoritized and

marginalized communities is not only an issue of justice and equity, but is also vitally

important in this age of major environmental challenges facing the world. All peoples are

needed to be "at the table" in regard to finding solutions to the pressing issues that affect

humanity at large but are often particularly acute in communities where Indigenous

peoples, people of color generally, and refugees live, as well as the Global South. Citing

the work of Running Grass, Marouli (2002) offers a general description of the important

components of a multicultural approach to environmental education:

> Children may have different needs based upon and shaped by their places and
> conditions of residence; all cultures have a unique (and different from other
> cultures') relationship with the natural world; Multicultural Environmental
> Education helps children become aware of, understand, accept, and celebrate
> other cultures and their environmental traditions; Multicultural Environmental
> Education critiques and seeks to transform the forces which have oppressed
> people as well as nature; Multicultural Environmental Education envisions a
> multicultural society at peace with the natural world and itself; and,
> environmental education curricula and programs should be based on the direct
> and significant involvement of families and communities. Thus, exposure to and
> respect of cultural diversity, environmental justice, a constructivist pedagogy, and
> community involvement are significant components of Multicultural
> Environmental Education. (p. 29)

The influence from the environmental justice movement as well as general multicultural approaches to education is clear. In this vision, critical learning and exposure to cultural diversity are essential elements that work together. By maintaining a connection to the concept of justice, this framing potentially avoids the political tiptoeing that has taken place in the implementation of multicultural education in the mainstream.

Urban Place-Based Pedagogy

A growing body of research supports the efficacy of placed-based environmental education in facilitating academic, personal, and social growth in urban youth. In addition to the quantitative studies cited above that showed improvement in motivation and academic performance, qualitative studies indicate that aspects of the Positive Youth Development[12] framework, such as increased sense of efficacy and improved social skills, are associated with participation in place-based environmental programs (Place-based Education Evaluation Collaborative, 2010).

Morgan et al. (2009) conducted a case study using field observations and interviews with past participants of Project Green Reach, a Brooklyn Botanic Garden summer garden-based youth education program, to evaluate its effects on the personal and academic development of low-income urban youth. They found that this hands-on gardening program successfully engaged such youth of color in environmental learning. Participants in the program showed social and personal growth, continued interest and improved academic performance in the sciences, and increased environmental awareness.

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[12] "Positive Youth Development can be described as a philosophical practice that strives to enable agencies, programs, and communities to engage youth in a manner that promotes positive and healthy transitions from adolescence to adulthood while enabling youth to reach their full developmental potential." See http://www.positivehumandevelopment.com/positive-youth-development.html

In addition to their positive views of the program, parents and participants viewed the

Brooklyn Botanic Garden and Project Green Reach as culturally significant to them. The

Brooklyn Botanic Garden is located centrally to the community, from which it draws a

diverse selection of participants and is seen by many as part of the neighborhood

landscape. The staff members reflect the cultural diversity of the community, and

participants' cultures are recognized through activities that relate to their family recipes

and plants from their regions of origin (Morgan et al., 2009).

Similarly, Schusler and Krasny (2010), by using narrative interviews in

investigating the practices of educators in facilitation of youth participation in local

environmental action, found that connecting youth to their communities was an important

factor in positive youth development. Creating safe spaces, providing life structure,

building respectful and trusting relationships, bridging differences, creating opportunities

for all learners to contribute, and expanding their horizons with new experiences were

other factors that the educators and participants reported as key components of

engagement with environmental action and personal growth as individuals and as citizens.

Such factors are noted in recent studies of a variety of environmental education programs.

Some educators and theorists claim that "wilderness" environmental education

programs are less effective than local place-based programs for suburban and urban youth

because they foster an idea of nature being "out there" and not in their own communities

(Roberts, 2012; Gruenewald, 2003). However, one program set in rural Maryland along

the Chesapeake Bay, called NorthBay Adventure Center, made a sustained impact on

urban African-American middle school students by utilizing a constructivist approach

that explicitly connected their experiences at its five-day residential programs with the

situations and environments they experience at home. The students were administered a pre-camp survey questionnaire, post-experience questionnaire, and a follow-up questionnaire after 3 months. Stern, Powell, and Ardoin (2011) found positive short-term outcomes in all three areas under study: environmental responsibility, character development and leadership, and attitudes toward school. At three-month follow-up, gains were maintained in all areas, except the attitudes toward school index, which was less positive.

Both the Brooklyn Botanical Garden Project Green Reach and the Chesapeake Bay NorthBay Adventure Center felt it was important to employ staff who reflected the diversity of the communities where the urban youths lived. The diverse staff could serve as role models for the inner city youth. Habib (1996) suggests that it is critical that environmental education programs in underserved populations use as mentors community members, who, though generally underutilized as educators, hold a wealth of knowledge that is vital to the cultural continuity and memory of a place. She posits that values of caring for life, which environmental stewardship fosters, are especially important to at-risk youth, who often may not have supportive family environments. In her assessment, experiential hands-on learning experiences are especially effective when connected to larger issues of political and social critique, so they become not just isolated good deeds, but a part of active service learning for social and environmental change "that supports the development of a socio-ecological consciousness and engages students in examining connections and contradictions among personal, historical, cultural and global perspectives on environmental issues, can foster critical thinking, and involve youth in community building, research and activism" (Habib, 1996, p. 13).

Social capital is another factor that environmental education researchers are exploring as being an important component of community-based programs, particularly those that engage in taking action on environmental issues. Krasny et al. (2015) argue that "consideration of social capital not only is consistent with participatory, emancipatory, place-based, and other approaches to EE, but also can help expand EE theory and practice to encompass research on factors that facilitate collective action" (p. 17). The authors suggest that several characteristics of these programs encourage social capital development among youth participants as they engage with non-family adults in environmental policy discussions and stewardship activities. The informal connections and bonds of trust that can potentially be created and nurtured through intergenerational programs that incorporate collective decision-making can lead to civic engagement. Intergenerational learning is facilitated when programs have hands-on learning, adequate time for in-depth investigation, and a local issues focus, among other factors (Duvall & Zint, 2007). Links between student learning and taking action are strengthened, empowering students to become involved in environmental decision-making in their homes and communities (Ballantyne, Connell & Fien, 2006).

While environment as a concept has typically been associated with nature outside of urban spaces, it is ever present in the built and nonbuilt structures and social settings of all students' lives, regardless of where they live. Fisman's (2005) mixed methods study of a place-based environmental education program in the New Haven, CT, public schools with students of varied socioeconomic status found that urban environmental education needed to take into account the reality of the students' home environment in devising the curriculum. Utilizing questionnaires, cognitive mapping exercises, and semi-structured

interviews, she found that students who are living in low-income, high-crime areas are inhibited by concerns for personal safety in developing awareness and a sense of connection and responsibility to place that is a goal of place-based environmental education. She suggests interpreting the study through the lens of an ecological model of childhood where students' "overall 'fitness' is a product of the stability of their community (their parents, teachers, siblings, peers, and neighbors) and their physical environment (access to stimulating and comfortable spaces)" (p. 48). In many minoritized communities, youth often see themselves as an "endangered species." High incarceration and murder rates for young Black and Latino men can perpetuate a self-image of vulnerability and nihilism (Cubrin, 2006) that must be taken into account by environmental educators. Context is key for the development and implementation of environmental education programs.

Indigenous Culture and Eco-justice

The emphasis in traditional Indigenous cultures on the interdependence of people and environments and on the need for a sustainable, harmonious relationship between people and the natural world, in conjunction with scientific knowledge and critical pedagogy, offers an important possibility of motivating students to become stewards of their environment (Longboat, Kulnieks, & Young, 2013). Key tenets of Indigenous ecological philosophies include: 1) an examination of the complex, interdependent relationships between human beings and nature, 2) a respect for all parts of the environment, 3) respectful, responsible use of resources, 4) the need for conservation, preservation, and enhancement of the natural environment, 5) a responsibility to future

generations, 6) respectful learning from elders, and 7) use of stories to raise awareness and impart knowledge (Ryan, Van Every, Steele, & McDonald, 2013).

Indigenous ecological education approaches emphasize the importance of students making a substantive and ethical connection to the land. Longboat, Kulnieks, and Young (2013) assert that environmental education needs to move

> *beyond* routine teaching and learning about *nature* to include an emerging pedagogy that espouses an understanding of the relationship of land to food, local and global issues, diminishing biodiversity, climate change, etc. Through an active and engaging analysis of the cultural and linguistic roots of the ecological crisis, eco-justice pedagogy is a vehicle for transformation and a doorway into providing a model of change. (pp. 9-10, emphases in original)

Eco-justice pedagogy from this perspective offers a framework for addressing the most pressing environmental issues of our time. Understanding the disjuncture between Indigenous and Western cultures and their ways of knowing is part of a path to actively creating substantive change.

Bowers (2001) has suggested that there are four eco-justice issues that can expand what is taught in most environmental education programs:

> (1) helping students understand the causes, extent, and political strategies necessary for addressing environmental racism;

> (2) clarifying the nature of the ideological and economic forces that are perpetuating the domination of the South by the North;

> (3) revitalizing the non-commodified forms of knowledge, skills, and activities within the communities represented by the students in the classroom—thus enabling them to participate in mentoring relationships that will develop their talents and interests, and to experience other community-centered nonmonetized relationships and activities that will develop a sense of responsibility for the well-being of the community;

> (4) helping students recognize the many ecologically informed changes in individual lifestyles and uses of technology that will help to ensure that future generations will not inherit a degraded environment. (p. 10)

Ryan et al. (2013) see the teaching of the knowledge and skills of resistance and advocacy as important components of an Indigenous ecological pedagogy, because poor and marginalized communities are affected earlier and more adversely by these environmental problems.

Land-Based Education

In the case of examining how colonialism affects environmental education, context is also quite relevant. Greenwood (2009) asserts that an effective critical pedagogy of place delves deep into the local context, unearthing both contemporary and historical tensions in ways that challenge the erasure of Indigenous peoples and their ways of knowing from the landscape, the community consciousness, and the educational curriculum.

> Place-conscious education, however, can potentially challenge learners to consider where they are, how they got there, and to examine the tensions between different cultural groups' inhabitation across time. In every case, in every place, this would mean listening for the voice of Native survivance, with an ear for learning from the relationship between Indigenous ways of knowing and local and global narratives of colonization and contestation. In the context of this remembering, place-consciousness also suggests a reassessment of all current inhabitants' relationships with land and people, near and far, now and in the future. (p. 4)

In places such as Alaska, where Indigenous people make up a significant proportion of the population, place-based approaches to Indigenous knowledge have been more readily incorporated into mainstream education due to growing recognition of how they can contribute to many fields of inquiry (Barnhardt & Kawagley, 2008; Henry-Stone, 2008). However, in most formal educational contexts this is not the case.

Paperson (2014) argues that environmental education has generally been silent on the issue of land and its deep relationship with Indigenous peoples, recasting places with

an extensive human–nature interrelationship as solely "the environment" devoid of the meanings and identities ascribed to them. He finds this issue particularly apparent in urban environmental education contexts:

> Urban educators have few tools for engaging settler colonialism because *terra sacer*[13] often undergirds environmental education in urban schools. Environmental education offers three limited social justice frameworks: environmental racism — a framework that focuses on pain; green curriculum — a framework that focuses on rescue; and place-based curriculum — a framework that focuses on inclusion, and thus, the replacement of Native land/people with a multicultural immigrant nation. (p. 120)

The author exposes one of the fundamental problems with most conceptions of multicultural environmental education (and arguably multicultural education in general) — the erasure of Indigenous people. Indigenous peoples and concerns are often just given lip service, if they are even acknowledged. According to Paperson (2014), "If Native people are mentioned at all, they are almost always only as a premodern population who were pleasantly 'one with nature,' or ecological Indians so few in number that the ecological settler becomes a 'good neighbor' or benevolent reinhabitant" (p. 121). If they are not actively challenged through critical approaches, the narratives of environmental education become yet another manifestation of the colonial project.

Bang et al. (2014) also echo the problematic issue of the erasure of Indigenous presence that takes place in educational spaces, noting that "the constructions of land, implicitly or explicitly as no longer Indigenous, are foundationally implicated in teaching and learning about the natural world, whether that be in science education, place-based education or environmental education" (p. 3). They argue that these educational spaces

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[13] The author defines this as "sacred/accursed land" — ghettos that are characterized as "wastelands ripe for rescue by ecological settlers" (p. 115).

are critically important due to their role in the reification of epistemic, ontological, and axiological issues that have shaped the construction of Indigenous histories by mainstream society. They note that the European Middle Ages are established as a reference point by which all other knowledge systems are denied validity through implicit and explicit narratives as well as representations of human–land relations. Their research in the Chicago American Indian community examined a land-based education project that was centered on Indigenous epistemologies and ontologies and the reclaiming, from deficit-framed narratives of dispossessed urban Indians, of stories of continued Native presence and the land "re-becoming" itself.

> As Indigenous people, we do not need to re-inhabit or learn to dwell in the places in which we have always dwelt. . . . For the teachers involved in this project, the process was not about re-inhabitation — it was learning from land to restore(y) it and ourselves as original inhabitants — that is living our stories in contested lands . . . and restoring land as the first teacher even in 'urban' lands. Narratives in which Indigenous people are absent, or relegated to a liberal multiculturalism that subsumes Indigenous dominion to occupancy, and narratives and positionings of land as backdrop for anthropocentric life, will only help to produce new narratives of territorial acquisition and fail to bring about needed social change. (p. 13)

The authors suggest that a "land education" requires many things, most notably critical thinking at borders of cultural worldviews, the rupturing of Eurocentric intellectual domination, a consciousness about the relationship of land and settler colonialism, resistance to land being consumed as resources for global markets, and the negation of presumptions regarding the absence of sovereign futures for Indigenous peoples (Bang et al., 2014).

Calderon (2014) similarly calls for a land education that foregrounds and analyzes issues of territoriality and settler colonialism; centers Indigenous realities by requiring that Indigenous ways of knowing, metaphysics, and the peoples themselves be part and

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parcel of it; and destabilizes the popular focus on the local by connecting how global

histories and broader ideologies impact it. She takes Greenwood's suggestions and

develops them even further, arguing that

> land education takes up what place-based education fails to consider—the ways in
> which place is foundational to settler colonialism. Land education is important for
> environmental educators and students because it asks them to rethink their
> relation to land as a dynamic ecological and cultural project of recovery and
> rehabilitation. Moreover, land education forces educators to engage the question
> of sustainability but not solely in ecological terms. Land education also requires
> educators and students to ask how their identities with place have been
> constructed and whose have been omitted in settler curricula. In this sense, the
> land education framework argued for here recasts the question of sustainability in
> terms of the possibility of making extinct settler informed understandings of place.
> (p. 33)

While some educators may feel threatened by such a strong articulation, it is clearly in

alignment with the sentiments of the more radical environmental education theorists.

However Calderon (2014) makes it clear that what she is arguing for is not some brand-

new concept but is drawn from a deep well of experience and discussions:

> Indigenous communities, scholars, activists, and allies have been articulating
> these insights for a very long time. Global Indigenous movements, coming
> together most recently under the banner of Idle No More — a grassroots response
> to legislation in Canada that undermines environmental protections of that settler
> nation's water systems and diminishes First Nations' sovereignty and ability to
> protect their homelands — demand such dialogue. It demands environmental
> education make visible and begin to address the inherent contradictions of settler
> colonialism within its project of education, as well as that of wider educational
> systems, priorities and processes. (p. 33)

The activism of the "red power movement" in North America and of other movements of

Indigenous peoples around the world has set the stage for challenging colonialism in all

its myriad forms, not only in the sociopolitical realm, but also the intellectual. There is a

growing trend to challenge the marginalization of Indigenous ways of knowing in all

educational spheres from graduate school to informal and nonformal learning environments.

Freidl (2011) points out that Western style placed-based education can be highly problematic when utilized with urban Native students, particularly those who live in cities located in their traditional homelands. She notes how Indigenous people and practices are framed as less authentic when taken out of the prescribed settings that the dominant society deems to be for "real Indians." Furthermore, in her experiences as an educator in Edmonton, Alberta working with primarily Cree youth, she has found that the efforts of non-Native urban environmental educators to impose their vision of place-based education on Indigenous students can reveal real deficiencies in mainstream approaches to environmental education:

> Today, concern over Indigenous representation in public schools increasingly produces a call for a stronger environmental focus in Indigenous education. Yet, revealed in this study are the problems resulting when a Hobbesian understanding of place takes centre stage. In circumstances such as this one, where place-based learning ignores important social and cultural dimensions, Native youth are encouraged to seize onto Western notions of "getting back to nature" . . . ; when this did not happen in the ways imagined by White outdoor and environmental educators, youth were described as "lost," "disinterested," and "without identity." While it may seem enticing to take up primitivist notions given that Native people are "loved" when they fit the mold of the picturesque that has been constructed for them . . . young people in this study display a steadfast unwillingness to do so. (p. 535)

The author's study revealed the need for more Indigenous participation in environmental education curriculum development as an act of cultural self-determination. She highlighted the ways in which place and tradition are more complex than accounted for in standard place-based education discourse and the need to take into account living oral traditions on environmental learning.

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Indigenous Knowledge, Western Science, and Environmental Education for Indigenous People

Traditionally in Indigenous communities, environmental learning took place as a part of everyday life. Children would observe their family, elders, and other community members working and interacting with their surroundings to learn the skills and knowledge needed to secure food, water, tools, and shelter. In modern times, informal learning still takes place for some Indigenous people in North America, but for most, formal schooling has become the predominant learning environment. The history of efforts to reconcile, integrate, or balance Indigenous knowledge with Western science instruction is needed to understand environmental learning initiatives among Indigenous people. Even though a large proportion of Native young people in North America live in urban locations, culturally relevant perspectives on nature and the environment are likely to be absent from the classroom unless those locations have a high proportion of Native students. The notable exception is Alaska, where Indigenous knowledge is integrated into the public school curriculum. Traditional ecological knowledge and Indigenous knowledge are generally not drawn upon substantially elsewhere in formal schooling, except in some schools that serve reservation- or reserve-based Native communities.

Education has long been utilized as a tool of colonization. From the schools established by missionaries to the notorious boarding (residential) schools of the United States and Canada, the policy was to "kill the Indian and save the man" — a saying attributed to Richard Henry Pratt, the founder of the infamous Carlisle Indian School. Longboat (1987) gives a succinct assessment:

> The education provided to First Nations . . . has been an important element in an overall policy of assimilation. It has been a means of replacing Native languages, religions, history and cultural traditions, values, and worldviews with those of the

European settler nations and of modifying the values of the Indian nations through their children — those who are weakest and can offer least resistance. Education has worked as an agent of colonial subjugation with the long-term objective of weakening Indian nations by causing the children to lose sight of their identities, history, and spiritual knowledge. (p. 23)

While Longboat is speaking specifically about the policies in Canada, the same can be said about those in the United States. The fundamental goal has been to erase Indigenous ways of knowing and to force Indigenous peoples to give up their traditional way of life to become either wards of the state or workers within the larger nation-state economy.

Western science often has negative connotations for Native people, as it is seen as a historical tool of colonialism that has marginalized Indigenous ways of knowing (Deloria et al., 1999; Tsosie, 2012). For Native and other students, it can be seen as a less engaging part of the educational curriculum. However, since science is often a key component of formal environmental education, it is argued that educators working with minoritized students should utilize elements of non-Western approaches to science education, as they can bridge the culture of science in the classroom and the students' culture outside of school (Aikenhead & Jegede, 1999; Ahlquist & Kailin, 2003; Carter et al., 2003; Key, 2003; Rowland & Adkins, 2003).

Carter (2011) also raises concerns with ways in which some scholars are framing discussions of Indigenous knowledge and Western science as it applies to science instruction. She argues that such discussions normalize Western science and "otherize" Indigenous knowledge by only addressing how science education is presented to culturally diverse students and in the construction of a "multicultural" science. While this is a valid critique of a dynamic that stems from a superficial approach to multiculturalism in the United States, a growing number of Indigenous educators are successfully finding

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ways to work with both knowledge paradigms. For Indigenous communities that have

been subjected to colonizing educational systems, this involves a shift from teaching

about culture to teaching through it:

> The knowledge and skills derived from thousands of years of careful observation, scrutiny, and survival in a complex ecosystem readily lend themselves to the in-depth study of basic principles of biology, chemistry, physics, and mathematics, particularly as they relate to areas such as botany, geology, hydrology, meteorology, astronomy, physiology, anatomy, pharmacology, technology, engineering, ecology, topography, ornithology, fisheries, and other applied fields. (Barnhardt, 2008, pp. 122-123)

Along with this collaborative potential for many areas of Western science, the

philosophical dimension of this encounter is highly significant, given the myriad of

environmental challenges facing our world. Semali and Kincheloe (1999) suggest that

Indigenous educators and philosophers want to use Indigenous knowledge to counter the

Western world's large-scale destruction of the earth. Indigenous worldviews tend to be

relational in nature, focusing on relationships of human beings to one another and to their

ecosystem, a point of view that has been largely absent in Western science over the last

four centuries, with its tendencies to reductionist and mechanistic interpretations of the

world. Knudtson and Suzuki (1992) highlight the implications of this fragmentation:

> thus, while science yields powerful insights into isolated fragments of the world, the sum total of these insights is a disconnected, inadequate description of the whole. Ironically, scientists today are faced with the devastating possibility that the whole is greater than the sum of its parts. (p. xxii)

In an age where environmental challenges from climate change to mass species extinction

are pressing matters, IK and Indigenous ways of knowing have a significant beneficial

role to play at a macro level in a multitude of ways. However, they can also be applied at

the local level in the classroom, working side by side with Western science.

Drawing on a decade of teaching biology to Native students, Cajete (2008) argues that the inclusion of Native cultural material in the science curriculum has resulted in higher student participation, activity, and retention. "Border crossing" is a key concept here, where students explore and are facilitated by their teachers in negotiating the commonalities and differences between Western science and Indigenous ways of knowing as they pertain to planetary and biological phenomena. By taking a holistic and culturally based approach to science education, where both content and presentation are different from the mainstream educational approaches, students connect topics to their lived reality and their communities, thus opening up possibilities for young Native people to advance their education. Environmentally and culturally based science instruction has been shown to have positive effects on not only academic achievement, but also social factors and positive youth development indicators (Aikenhead, 2011). Greenwood et al. suggest that "environmental education is most effective and relevant when it purposefully seeks to make connections between culture and environment" (2009, p. 91).

Demmert and Towner (2003) define culturally based education for Native peoples as having six critical elements: recognition and use of Native [North] American languages; pedagogy that stresses traditional cultural characteristics and adult-child interactions; teaching strategies that are in alignment with traditional ways of knowing and learning; curriculum that is based on traditional culture and recognizes the importance of Native spirituality; strong Native community participation (including parents, elders, and other community resources) in educating children and in the planning and operation of school activities; and last, knowledge and acceptance of the social and political mores of the community. In their comprehensive assessment of Native education,

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Castagno and Brayboy (2008) contend that the environment has a central role in culturally situated and responsive pedagogical approaches. They note that Native scholars have emphasized the importance of natural settings, where one learns by example from peers and community members through observation and participation in everyday activities, and where nature itself is an important teacher. Such culturally based learning environments place a high value on relationships, reciprocity, competency, and collaboration for the betterment of the collective.

Traditional Indigenous pedagogies include means of imparting knowledge and values through stories, examples, myths, and songs that involve land-based learning experiences and collective activities with opportunities for sharing. According to Cajete (1994), whose work is highly influential in the field, the basic elements of Native environmental education programs should include:

- immersion in learning cultural and historical content that puts into context a particular Tribal way of knowing a Place,

- learning practical skills for living in specific environments,

- creating opportunities for spending extended time in a natural place to develop personal relationships with Nature,

- incorporating service related activities for students to enhance or restore a natural place,

- and creating activities that help re-enchant the students toward Nature thereby setting a foundation from which they may perceive the innate worth of perpetuating the environmental traditions of Indians in the contemporary framework of their lives. (p. 115)

This is an Indigenous conception of place-based education that implicitly incorporates sociopolitical elements of land-based education, while preserving the technical skills that outdoor and primitive-skills-based education emphasize, fostering direct contact with

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nature, land stewardship activities, and perhaps most importantly, an element of pedagogical magic and mastery that creates a deep and lasting bond between students, nature, and their peoples' environmental knowledge. Cajete (1994), while giving credit to the work of Freire, suggests that this model serves the serious needs of Native communities for self-determination, particularly as it pertains to education.

> It illuminates the true nature of the ecological connection of human learning and helps to liberate the experience of being human and being related at all its levels. From this perspective education takes on the quality of a social and political struggle to open the possibilities for a way of education that comes from the very soul of Indian people. (pp. 219-220)

These practical guidelines articulate the foundational elements of Indigenous environmental education, upon which more can be built, as this area offers numerous possibilities for creative exploration, along with inspiring teaching and learning experiences. For instance, in a study based on participant observation and interviews with Native and non-Native environmental educators in Ontario, Lane (2010) found that the embodiment aspect of a combined Indigenous knowledge and performing-arts-based environmental education curriculum deeply reaches and motivates students, fostering self-discovery and empathy.

In addition to its relevance for Indigenous people who have been forcibly assimilated into Western ways of knowing through formal education, forward-thinking place-based scholars see a great value in non-Native students engaging with Indigenous knowledge and perspectives on place (Greenwood, 2009; Semken and Brandt, 2010; Hensley, 2011). Similar to what land education theorists articulate, this can entail acknowledging the stories Indigenous people have to tell about their connection to land and place, and their continued presence or *survivance*, as well as learning about

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colonization and settlement and how they connect to modern trends of globalization and neoliberalism (Greenwood, 2009). Additionally, many of the issues that Indigenous communities have faced at the periphery of industrial civilizations are now becoming more and more pressing to the centers of those societies; therefore, the insights of Indigenous peoples are of interest and benefit to the educational community at large (Barnhardt, 2008).

Engagement with Indigenous ways of knowing and Indigenous-influenced pedagogies is also advocated by many theorists of critical approaches to environmental education. Tippins and Mueller (2010) state:

> In contrast to western science and its quest for universal relevance, ecojustice, when woven together with a sense of place and indigenous environmental knowledge systems, is local and highly contextualized. In both an ideological and material sense, the confluence of these three currents provides a different way of reading the world — one that acknowledges the responsibility humans have to nature as well as to each other. (p. 3)

Many Indigenous advocates, as well as environmental theorists, argue that it is the philosophical separation of humans from their environment and their "elevation," influenced by the Enlightenment and the Scientific Revolution, that allowed great ecological damage to be done in the name of progress. Kahn (2010) suggests that, in an *ecopedagogy* educational paradigm, Indigenous knowledge

> becomes a new science of sustainability — of the multitude as living, interactive, indigenous earth democracy — that rightly opposes all manifestations of Western sovereignty in favor of the reconstitution of an indigenization that authorizes and empowers all manner of creative, participatory, and peaceful planetary co-relations between beings great and small, human and nonhuman alike. (p. 120)

While this is an arguably idealistic and even somewhat romanticist position, it is grounded in the subjective reality as articulated by many Indigenous traditionalist authors and spokespersons. In every corner of the world Indigenous peoples are struggling to

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maintain their lands and traditions in the face of Western hegemony that manifests as displacement from their territories and severe environmental impacts from resource extraction and climate change. In one of the first statements given by Indigenous peoples in the international arena, *The Haudenosaunee Address to the Western World,* the authors assert a sentiment similar to Kahn's:

> The people who are living on this planet need to break with the narrow concept of human liberation, and begin to see liberation as something which needs to be extended to the whole of the Natural World. What is needed is the liberation of all things that support Life — the air, the water, the trees — all the things which support the sacred web of Life. (Akwesasne Notes, 1978, p. 53)

The maintenance of community traditions of sustainable lifeways that have allowed varied communities to exist in a good relationship to their surroundings is also a key component of an ecojustice paradigm, not only because it is the right and just thing for those particular people, but because it sets an example that the rest of the world can learn from and emulate when appropriate (Bowers, 2001). Indigenous peoples wish to see Indigenous knowledge used as a counterbalance and mitigating factor to the environmental harms wrought by Western science running unchecked by ethical concerns (Semali & Kincheloe, 1999).

<div align="center">Summary</div>

A review of diverse literatures from a variety of fields helps to frame this study, which is focused on the intersection of Indigenous ways of knowing, digital storytelling, and environmental learning. Indigenous knowledge and ways of knowing are defined by their holistic orientation and rootedness in relationships with specific environments. However, they continue to be relevant to the large populations of Native peoples who currently reside in urban areas. Though they are often situated in opposition to Western

ways of knowing, scholars are elucidating the differences and commonalities in ways that are producing constructive cross-cultural understandings. Indigenous video production is an assertion of cultural sovereignty that contains embedded aesthetics that reflect Indigenous ways of knowing. It is a growing field that is diverse in its manifestations, from documentaries to narratives, animation, and experimental installation works. The modality of digital storytelling is being utilized by Indigenous people for conducting research on health and environmental topics, as well as documenting culture, and is viewed as a modern extension of traditional storytelling, particularly by young people.

Digital media and related arts are being utilized by environmental educators to expand their pedagogies in ways that reach young people growing up in a digital age. Though electronic media technology is associated with taking people away from contact with nature, a small but growing number of educators are finding ways to use it to foster environmental learning. The realm of aesthetics and environmental ethics is one where Indigenous philosophies and Western environmental theorizing are finding common ground. Understanding the importance of the affective realm for influencing peoples' conception of and attitudes toward the environment is useful for making a case for the value of arts-based approaches in environmental education. Environmental/ecological literacy and identity are key aspects for understanding the effectiveness of environmental education. Critical approaches in this area are willing to engage students' cultural identities, such as using environmental themes in hip hop, to foster environmental literacy. The role of memories of significant life experiences in environmental education programs that strengthen pro-environmental attitudes, behaviors, and identities highlights the

importance of direct contact with nature and social contexts, as well as the need for longitudinal research.

Multicultural environmental education seeks to incorporate diverse perspectives, as well as liberatory approaches such as decolonial and land education paradigms, to a field that has been critiqued for its lack of representation of all peoples' conceptions of the environment and related issues. Environmental educators using multicultural, critical, and Indigenous paradigms are finding success in promoting student engagement, academic achievement, and positive youth development goals while consciously addressing issues of social and environmental justice. The importance of community, the development of social capital, and the fostering of empowerment are also foregrounded in these contexts. Indigenous knowledge and Western science are finding both tensions and common ground in the field of environmental education. As practitioners and theorists seek out ways to successfully engage Native and non-Native students in both knowledge acquisition and the development of environmental ethics, new pedagogical approaches that draw from the extensive knowledge of Indigenous peoples are making significant contributions to the conversations taking place regarding multicultural environmental education.

Taken as a whole, these literatures suggest that nonformal environmental education programs that embrace Indigenous ways of knowing and digital media arts can create experiential, intergenerational, critical, and culturally relevant learning that fosters environmental ethics, literacy, and empowered identities among participants.

Chapter 3. Methodology

"You can't understand the world without telling a story. There isn't any center to the world except a story." — Gerald Vizenor (Anishinabe)

Introduction

As an Indigenous person whose research has centered on community-engaged, participatory projects, I feel a strong sense of responsibility to the participants in this study. I have formed important relationships with them that I value greatly. That responsibility includes working with them openly and transparently about my research goals and the development of interview questions. I aim to have their voices come through clearly to speak to the questions this study is seeking to address. My own voice is woven in throughout this study as both a researcher and as an educator at the research sites. I knew from my observations working with these programs that there was an important story to tell about how participants were learning about the environment, experiencing personal growth, and developing a strong sense of environmental ethics. All of these factors influenced my methodological decisions.

My three research sites are the Green Guerrillas Youth Media Tech Collective in Ithaca, New York, the Emerging Indigenous Leaders Institute in Nevada, and the Seneca Nation's Early Childhood Learning Center on the Cattaraugus Territory. The research focused on the intersection of Indigenous ways of knowing and digital storytelling in environmental education contexts and how the participants at the three sites experienced such pedagogy. I decided to use qualitative narrative inquiry and participatory ethnographic methods informed by Indigenous methodologies as I had determined they were the most appropriate and effective means for me to accomplish a number of goals. I

wanted to foreground an Indigenous paradigm as an academic who is engaged in a process of intellectual decolonization. Additionally, the experiences of participants in these programs and the meaning they ascribe to them are illuminated most effectively through qualitative methods, specifically ones coming from the narrative and participatory ethnographic traditions. These methods can open up a rich understanding of these learning environments through the stories told by the youth and adults in these programs, as well as by me as a deeply embedded participatory researcher. A survey or controlled experiment would not address the kinds of questions I was approaching in this research. The ethical considerations of these methods are also germane to my goals of egalitarian research that respects and honors the experiences and knowledge of the participants that is being shared with me. This chapter relates the details of how this research was performed through my story of coming to understand these methods and their applicability to my work.

This study's participants were youth participants/students and educators from these three community-based projects in which I was a facilitator or instructor utilizing a pedagogy that combined digital storytelling and Indigenous ways of knowing. As with my master's thesis work (Corwin, 2010), I was interested in exploring the nuances of the learning experiences of the participants. While my thesis focused on the first two years of the Green Guerrillas (GGs hereafter), the current study includes a retrospective view of the five years of the program's operation (2006-2011) through interviews of its youth participants and adult volunteers. It also includes an ethnographic study of a traditional agriculture and digital-storytelling-focused environmental education project that I created

and led at the Seneca Nation Cattaraugus Territory[14] Early Childhood Learning Center (Cattaraugus ECLC hereafter) in 2014. I also am investigating my own experiences teaching digital storytelling as a visiting faculty member for the Emerging Indigenous Leaders Institute in Nevada (EILI hereafter), as well as those of the students I taught. Between 2008 and 2013 I worked with three cohorts of EILI students. For that site I mix autoethnography with interviews and narrative analyses of the digital stories they created under my tutelage. Being a participatory researcher and educator for all three sites in this study ensured that I would be writing myself significantly into what Clandinin and Connelly refer to as the *research midst.* This is not rare, for as they note, "narrative inquiry very often begins with the researcher's autobiographically oriented narrative associated with the research puzzle" (Clandinin & Connelly, 2000, p. 41).

Archibald (2008) also remarks that "many First Nations storytellers use their personal life experiences as teaching stories in a manner similar to how they use traditional stories" (p. 112). I found great comfort in my own journey as an Indigenous researcher drawn to using narratives when I discovered the thesis of Cardinal (2010) and the dissertation of Michell (2007), two Indigenous educators who engaged with narrative inquiry and Indigenous methodologies in their work. Cardinal's (2010) deeply candid and moving exposition on her personal struggles with identity issues and finding a sense of self as a graduate student resonated with some of my own experiences and reminded me of the importance of sharing stories. I intend for my research and methodological

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[14] Among the Haudenosaunee (comprised of the Seneca, Cayuga, Onondaga, Oneida, Mohawk, and Tuscarora nations) land holdings and communities are commonly referred to as territories rather than reservations, although that term is also used.

considerations to reflect a thoughtful exchange between the Indigenous and narrative inquiry paradigms that will contribute to the conversations in those fields, as well as those of environmental education, particularly as it pertains to culturally relevant and technologically knowledgeable approaches for minoritized youth.

Methodological Motivations

My master's thesis gave me my first opportunity to explore qualitative research with a specific focus on narrative inquiry. Since the questions I was asking in that research study were centered on the experiences of the participants in the GGs and I desired to craft a case study that was presented as a narrative of the beginnings of the group, a story-based methodology seemed most appropriate. Through my graduate studies I had become more familiar with both narrative inquiry and the growing body of literature dedicated to Indigenous and decolonizing research methods. These two research methodologies continued to resonate strongly with my lines of inquiry as an Indigenous researcher working with Indigenous and marginalized youth. Furthermore, narrative inquiry methods have also been found to be valuable in environmental education research (Hart, 2002; Bell, 2003). My work as an environmental educator has focused on combining digital storytelling and Indigenous ways of knowing in nonformal learning communities. I have a deep interest in people's lived experience of environmental education settings and their sense of connection to nature and environmental ethics.

Following the calls of Indigenous and post-colonial scholars for critical and decolonizing approaches to research, I concur that there is a tremendous opportunity in the 21st century for the expression and documentation of ways of knowing that have not been accepted as valid in the Western scientific model and academia. While some aspects

of Indigenous knowledge are becoming acknowledged by non-Indigenous people, particularly what is referred to in the literature as Traditional Ecological Knowledge or TEK, it has often been in limited ways that serve the interests of traditional power centers such as international development agencies (Simpson, 1999). I count myself among the activists, artists, and scholars who see the age of global digital communication, coupled with the inherent power of stories to educate and mobilize people, as providing new possibilities for challenging the extensive hegemonic military, social, and economic power that is exerted against marginalized communities, particularly Indigenous ones. In my opinion, stories have too often been dismissed as unscientific and unreliable by the academic status quo. Part of my process of coming to an Indigenous and decolonizing research practice is foregrounding stories as a central feature of my research agenda.

Both Indigenous and narrative inquiry approaches to research have created a growing body of literature, particularly in the last decade. While I was researching and starting to write my master's thesis I audited a course on narrative inquiry methods. The ideas and claims being made in the literature I studied resonated strongly with me. That study was my first attempt at using narrative methods and I continued to explore the field of narrative inquiry as I developed my doctoral research. I also studied the emergent literature about Indigenous research methods and saw some correspondences. Stories shape all human cultures — they are the primary mode of meaning-making in our socially constructed lives. As researchers have taken the "narrative turn" (Clandinin & Rosiek, 2007) and engaged with the power of stories, there now exists a greater potential for the realization of aspirations for egalitarian and locally beneficial research relationships between the academy and Indigenous and other subaltern communities

(whether the researchers themselves are Indigenous or not). Narrative inquiry encourages a critical self-reflexivity as well as an ethical practice of giving voice to the validity of the meaning that narrators ascribe to their experience from their cultural orientation and subjectivity. This suits it to be in dialogue and exchange with Indigenous research methodologies that also highlight the importance of ethical research that prioritizes Indigenous perspectives and ways of knowing. Though they may have different primary goals and objectives, as well as operating paradigms, they have much in common. Even though they arose in different contexts, they share a number of correspondences that make them complementary, particularly in the centering of storytelling as the key component of research data.

In contrast to paradigmatic and theoretical knowledge, a narrative approach to knowing engages the hows and whys of dynamic human experience instead of reducing it to objects and categories. Stories are both the phenomena being studied and the method for exploring them (Pinnegar & Daynes, 2007). They are also central components of Indigenous ontology and epistemology (Cajete, 1994). Indigenous and allied non-Indigenous scholars have articulated the important role that storytelling and narratives can play in Indigenous research and teaching (Archibald, 2008; Cajete, 1994; Chilisa, 2012; ChiXapKaid, 2005; Denzin & Lincoln, 2008; Smith, 1999). "As a research approach facilitating knowledge gathering, storytelling appeals to our relational mode of understanding while inspiring problem solving" (Palacios, 2012, p. 46). I have found this assertion to be true having been a media maker–videographer for 20 years with a primary focus on activist and educational projects, many of which focus on Indigenous peoples and issues. This is one of the reasons why I am attracted to narrative-based methods.

My background in activist media, commitment to social justice, and identity as an Indigenous person also informed my decision to utilize Indigenous research methods that take into account the need for decolonization. There are broad arrays of stories from Native communities that serve as counternarratives to the dominant discourses of mainstream colonial or settler society (Denzin & Lincoln, 2008). These discourses are evident in popular culture and academia. I think it is important to recognize the problematic and exploitative history of research done on Indigenous peoples. Ermine, Sinclair, and Jeffery (2004) assert that "the old order of research — positivist, empirical, and driven by the agenda of the academy, has not served Indigenous populations whose interests are currently geared toward surviving and thriving through self-determination and control over resources including cultural and knowledge resources" (p. 9). A decolonizing Indigenous research paradigm emphasizes the importance of emancipation and liberation, with practical outcomes and benefits for the research participants, as well as creation of an ethical space where the research takes place (Ermine et al., 2004).

In the course of studying the broader category of qualitative methodologies I also encountered grounded theory, which appealed to me for its openness in allowing the research process to unrestrictedly create new knowledge rather than being hindered by predetermined categories of analysis. The defining aspect of grounded theory is that categories of analysis are developed *after* research has been carried out rather than *before* (Bryman & Teevan, 2005). It was important for me to let the qualitative data I was gathering "speak for itself" and not limit it with preconceived ideas. I decided that I would make Indigenous and narrative inquiry methods the core of my research approach, while keeping an openness to the data offered by a grounded theory approach.

Narrative and Indigenous Research: Ontology and Epistemology

I present the following discussions of literature to give the reader a background in the methods I have chosen to use. These are the authors and concepts that gave me a research language that made sense to me as fitting the needs and goals of this project. It is my belief that both Indigenous and narrative inquiry methods, in an appropriate context, can offer a researcher a coherent and sensible way of approaching a study. It would be prudent, at this point, to attempt to define the term "narrative". This is actually more challenging than it appears, as there are multiple definitions both in everyday use and the research literature that range from the restrictive to the expansive (Riessman, 2008). On one end of the spectrum is the field of social linguistics where "narrative refers to a discrete unit of discourse, an extended answer by a research participant to a single question, topically centered and temporally organized", whereas on the other end, "there are applications in in social history and anthropology, where narrative can refer to an entire life story, woven from threads of interviews, observations, and documents" (Riessman, 2008, p. 5). In this study, I am using a broad definition, as I am creating larger meta-narratives of each research site that combine a variety of narrative sources. I utilize interview responses which range from brief answers for a question to extensive stories, as well as digital stories, a field journal, and autoethnographic writings.

In the latter part of the 20th century, qualitative research began to take a "narrative turn" via scholars who were disenchanted with the positivist paradigm and had been influenced by the "interpretive turn," which sought to examine lived experience (Clandinin & Rosiek, 2007). Narrative inquiry, while drawing from the paradigms of constructivism, phenomenology, hermeneutics, and post-structuralism, as well as a

Deweyan theory of experience, focuses its lens more specifically on the storied aspect of human reality. In this paradigm, stories are central to the human experience. They are both the phenomena being studied and the method for exploring them (Pinnegar & Daynes, 2007). Through stories, identities are constructed (from the individual, to the family, to nations and religions), connections within societies are made, culture is transmitted, media interact with people, and behavior is adapted. They function on multiple levels individually and collectively, serving this wide array of functions because they are holistic by nature — bridging temporality (past, present, and future); uniqueness and universality; cognition and emotion; activity and reflection. There is a dynamic relationship between them and lived life. This is the ontology of the narrative inquiry paradigm (Clandinin & Rosiek, 2007; Spector-Mersel, 2010).

How stories are produced is the epistemology of narrative inquiry. No matter when they are set temporally, they are grounded in the narrator's present vantage point. Furthermore, they are the result of a process of selecting which elements of the story are to be related. Finally, they are rooted in three contexts: the specific relationships in which they were created, the society in which they developed, and the larger meta-narratives that give them meaning (Spector-Mersel, 2010).

Indigenous ontologies and epistemologies are fundamentally about relationships — not only relationships between people, but between all living things, the abiotic world, and the unseen (Benham, 2007; Cajete, 1994; Kincheloe & Steinberg, 2008; Wilson, 2008). The ceremonies that comprise traditional Indigenous spirituality are essentially about fulfilling relationship obligations to the natural world and the world of spirit. Wilson (2008) states:

Every individual thing that you see around you is really just a huge knot — a point where thousands and millions of relationships come together. These relationships come to you from the past, from the present, and from your future. This is what surrounds us, and what forms us, our world, our cosmos and our reality. We could not *be* without *being in relationship* with everything that surrounds us and is within us. Our reality, our ontology is the relationships. . . . Some of these knots of relationships are not visible or tangible entities, but they are there just the same. They are developing ideas, grand abstractions, entire systems of thinking. This is our epistemology. Thinking of the world around us as a web of connections and relationships. Nothing could be without being in relationship, without its context. Our systems of knowledge are built by and around and also form these relationships. (p. 76) (emphases in original)

Granted that there are thousands of Indigenous cultures around the world, with diverse worldviews and cosmologies, it may seem inappropriate to speak in such broad terms. However, interactions among the world's Indigenous peoples through international forums over approximately the last four decades,[15] coupled with a growing cadre of Indigenous scholars, have led to agreement that there are some shared fundamental core values and beliefs regarding the relationship between humans and a natural world that is infused with spirit and sentience. For instance, many Indigenous peoples of the Americas see the earth as being a mother.

Western science has, until recent times, generally neglected the realms of relationships and inner being that are fundamental aspects of Indigenous knowledge. The Cartesian–Newtonian paradigm has been critiqued as excessively reductionist and myopic (Kincheloe & Steinberg, 2008) as well as fragmentary due to its objective stance, separating the world from ourselves (Ermine, 1995). Indigenous epistemologies tend to be less dualistic and more complementary than Western ones. They are not easily standardized, as they exist in relation to place and person (Kovach, 2009) and are holist

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[15] See *Basic Call to Consciousness* (Akwesasne Notes, 1978) and United Nations Declaration on the Rights of Indigenous Peoples (General Assembly, 2007).

and monist in philosophical orientation, emphasizing the connectivity of relationships of all things in the universe, as well as the importance of lived experience (Burkhart, 2004; Cajete, 2004). In describing a Cree perspective, Ermine (1995) states,

> The idea of our progenitors was to try to gain understanding of many of the greatest mysteries of the universe. They sought to do this by exploring existence subjectively; that is, by placing themselves in the stream of consciousness . . . because all of life is connected, and all of life is connected with and accessed through the life force. . . . It is an experience in context, a subjective experience that, for the knower, becomes knowledge in itself. The experience is knowledge. (p. 104)

Stories and oral traditions have always been a core component to that epistemology, for it is through elders' stories and all the knowledge embedded in them, in combination with one's own stories or lived experiences, that one comes to understand how the world works and one's place in it. It is fundamentally a relational process, as the interactions among storyteller, story, and listener are an organic process that goes beyond mere textual analysis (Archibald, 2008).

Here I found an intersection, a point of unity, between the two research methodology paradigms. Narrative researchers understand that research is not only about relationships between researchers and the researched, but that narratives also reveal relationship dynamics in substantive ways. As the core of this research is an examination of the relationship between the study participants and the environment, as influenced by their participation in digital storytelling projects, the strong emphasis that both research paradigms place on the power of stories validated their usefulness for this study to me. Furthermore, their deep sensitivity to responsible research ethics is very important for a participatory study such as this one, where there is a high level of trust between the participants and myself, as both an educator and researcher.

Indigenous Storytelling and Research Methodology

In my life I have had the privilege of experiencing Indigenous narratives in a variety of forms, from oral to written and filmic. As a documentary media producer I have created many nonfiction stories. Among my circle of friends I am known as someone who in the course of conversation tells long but engaging stories. Indigenous societies place a high value on stories, as they are seen as sustaining community relationships, validating experiences and epistemologies, and being essential to the sharing of knowledge (Iseke, 2011). As with narrative inquiry, an Indigenous research methodology recognizes the central nature of stories to human experience. Cajete (1994) notes that:

> humans are one and all storytelling animals. Through story we explain and come to understand ourselves. Story — in creative combination with encounters, experiences, image making, ritual, play, imagination, dream and modeling — forms the basic foundation for all human learning and teaching. (p. 68)

This description can apply, as Cajete asserts, to all of humanity. Some of the most noted scientists of our time have become popular through their mastery of storytelling, such as Jacques Cousteau, Carl Sagan, and Neil deGrasse Tyson. What makes Indigenous storytelling unique and different from some other forms of narrative is that its function is to document and transmit a culture's views, philosophical orientations, and traditional ecological knowledge that have developed through a people's extended inhabitation of *a particular location* (Cook-Lynn, 2008). Kovach (2009) finds that Indigenous narratives are important at both the individual and community level, are intimately connected with place, and that:

> name-place stories matter: they are repositories of science, they tell of relationships, they reveal history, and they hold our identity. . . . Stories connected

to place are both about collectivist tribal orientation, and they are located in our personal knowing and conceptual framework of the world. (pp. 61-62)

Far beyond mere entertainment, stories are fundamental to the construction of indigeneity — an identity rooted in place, kinship, and community.

Indigenous societies have a great diversity of stories: folklore and folktales; legends and mythological stories; stories in song and poetic forms; as well as the narratives that are generated from everyday life experience and even contemporary research projects. Each and every one of them fulfills a specific purpose in the society from which they originate, which a researcher needs to be conscious of. "They fill the gaps and provide the missing literature, theories, conceptual frameworks, and research methods in a postcolonial indigenous research paradigm" (Chilisa, 2012, p. 139). This paradigm does not privilege the written word of anthropologists, academics, missionaries, and travelers to define an acceptable literature, but instead prioritizes the assessments of Indigenous peoples themselves. This is not to say that other literature and sources of documentation are outright discarded; however, to uphold the Indigenous research principle of self-determination, they must be critically analyzed internally and in relation to the rich body of community narrative, which is too often ignored or marginalized in academia.

Cree elder Jerry Saddleback, as cited by Wilson (2008), explains that there are three levels to Indigenous narratives. At a high level are sacred stories. The knowledge of these is restricted and requires initiation into certain societies through a selection and training process, in which the bearers are qualified, sanctioned, and given the responsibility to carry on these stories. The stories must be memorized and told precisely, as they contain the deep, sacred history of the people. An example of this is the retelling

of the founding of the Haudenosaunee Confederacy by the historic cultural heroes known as The Peacemaker and Hiawatha. There are not many people today who know how to recite the entire story, which can take several days, and such a recital is considered a very special kind of responsibility.

The next level of stories are those that people call myths or legends. They are more popularly known and contain morals, lessons, and events; however, each storyteller adds his or her particular twist to the telling. These are the kinds of stories that can be found in books and are told by professional Native storytellers in modern times. They are usually geared to a juvenile audience. The third type consists in relating personal experience or the experience of others. Elders often use the real-life experiences of themselves, their peers, and others to illustrate ideas they are explaining and teaching. These stories reflect the lived experiences of the community's Indigenous knowledge.

There also exists a diversity of stories told by Native people that expose the hidden layers and tensions behind official history. These stories of resistance, subversion, and critique take many forms. According to Denzin and Lincoln (2008),

> these forms include not only performance autoethnography but also short stories; conversations; fiction; personal narratives; creative nonfiction; photographic essays; personal essays; personal narratives of the self; writing stories; self stories; fragmented, layered texts; critical autobiography; memoirs; personal histories; cultural criticism; co-constructed performance narratives; and performance writing that blurs the edges between text, representation and criticism. (p. 12)

These varied expressions of storytelling have the potential to serve a liberatory purpose in an Indigenous research framework. In addition to providing counternarratives to colonial ones, they can serve as affirmation of Indigenous culture and worldviews.

Smith (1999) catalogues twenty-five types of Indigenous research projects as a starting point for thinking about the different ways one can approach research within a pro-Indigenous paradigm. One of these involves focusing on storytelling, which she sees as being particularly powerful. Important oral histories and the perspectives of marginalized, subaltern voices, such as those of women and elders, have been brought to light through this kind of research. Additionally, the functionality of stories to the research process in this context is crucial. As an approach, it creates dialogues and conversations among Indigenous people using familiar cultural characters, themes, and signifiers that can both challenge and reassure through common historical legacies. Furthermore, there is an egalitarian and democratic component to Indigenous narrative research: "the point about the stories is not that they simply tell a story or tell a story simply. These new stories contribute to a collective story in which every indigenous person has a place" (Smith, 1999, p. 144). Stories enable writers to get away from the abstractions and rules dictated by Western academic discourse and allow the audience to gain life lessons and draw conclusions from their personal perspectives, particularly if their vantage point is from within an Indigenous culture.

What makes Indigenous, decolonizing methodologies different from other research methodologies is the attentiveness and priority given to the political and cultural needs of Indigenous peoples. Whereas some methodologies approach cultural practices and norms as either barriers to research or aspects that must be navigated to avoid offending the research subjects, Indigenous methodologies explicitly incorporate cultural practices and beliefs throughout the research process (Smith, 1999; Chilisa, 2012). As cultural protocols are key to successful and valid research it is important to have research

advisors — knowledgeable, respected, and well-connected community members — who can help guide the process (Kovach, 2009). Within many Indigenous cultures, the sense of space between people and between people and the environment is sacred. Ceremony and ritual are designed to bridge that space—bringing them together to share space both physically and metaphysically. Within an Indigenous research paradigm, research itself is viewed as a kind of ceremony as it both builds relationships and creates opportunities for sharing sacred space (Wilson, 2008). Archibald (2008) details some of the questions that guided her approach to culturally appropriate decolonizing Indigenous research among her own people:

> I knew that I had to venture to the unfamiliar territory of decolonization by questioning my motives and methods and ensuring that the negative legacy of research history was addressed. I asked myself, "Was I doing anything different from earlier 'outsider' academics who created a legacy of mistrust among First Nations concerning academic research?" "How was my research going to benefit the education and wellbeing of Indigenous peoples and their communities?" "How would I address ethical issues related to respect and ownership of Indigenous intellectual property?" (p. 36)

These are the types of questions that ideally should be internally asked by a researcher of any background who is going to conduct work in partnership with Indigenous peoples. It is an important part of the reflexivity required for doing work that is useful and valuable to the community from which it comes, not solely that is intended to advance the career of the researcher or to generate knowledge for the benefit of academia. As the legacy of research being conducted from a hegemonic colonial framework has reinforced the subordination, exploitation, and marginalization of Indigenous peoples, I am in agreement that the future of research in Indigenous communities must be characterized by egalitarian partnerships that address all issues of ethics and intellectual property.

The relationships and trust between researcher and researched are key for validity of results in the Indigenous context. If there is a separation or a breakdown in the relationships, then validity is called into question. Analysis must accurately represent the relationships between the participants and their ideas (Wilson, 2008). The selection process must be reciprocal: not just the researcher choosing who will participate but participants choosing to be a part of the project because they respect the work of the researcher (Kovach, 2009). In this way a mutual relationship is created in which truth claims are validated by the openness, transparency, respect, and even love fostered by these connections. As noted in the opening of this chapter, I have established significant relationships with my study participants not only as an educator and mentor, but also as a friend.

These considerations of respect, reciprocity, and relationship do not only apply to Indigenous researchers doing research in Indigenous communities. They should be part and parcel of any ethical and accountable research endeavor involving Indigenous peoples and, I would argue, any community or persons. Local community co-researchers should be an integral and egalitarian part of the research process, so that the underpinnings of the research will reflect, and thus respect and honor, the Indigenous knowledge system of the particular people being engaged with (Kassam & Tettey, 2003). One example of an exciting partnership is taking place in the Arctic, where Indigenous knowledge holders, most of whom have no professional or academic credentials, are working with climate scientists to combine on-the-ground observations informed by Indigenous lifeways (that is, knowledge embedded in traditional and contemporary stories about weather and environment) with satellite imagery and other modern scientific

measurements. Such a collaboration is expected to benefit the local communities, not just the scientists or the global community concerned about the Arctic climate (Alexander et al., 2011). It is my belief that the primary locus for the social and ethical evolution of humanity in the 21st century is the hybrid borderland at the intersection of Indigenous knowledge, particularly its philosophical aspects, and Western technology and science.

As with the Indigenous paradigm, the narrative paradigm emphasizes stories as being central to a human experience that is relational and transactional in nature, and that lived experience is the beginning and ending of inquiry (Burkhart, 2004; Clandinin & Rosiek, 2007). In fact, according to Harnett (2010), they demonstrate the commonality of humans as they have sought to understand their world through creation stories that explain how the natural world works and how humans are to relate to it and live within it. The stories are also the mechanism to pass those understandings on to their descendants. Not only do those stories explain the human relationship to the environment but also the dynamics and norms of the social world. "Storytellers had a clear function within their communities: they rooted people with their past; they were the memory makers of their communities celebrating and recording the past, providing explanations of the present and searching out meanings for the future" (Harnett, 2010, p. 161). Narrative inquiry, by acknowledging the centrality of story to our consciousness and life experience as both individuals and as social beings, aligns itself with one of the core understandings of Indigenous societies and epistemology: that there is great wisdom and knowledge in stories.

In an Indigenous cultural paradigm, collective memory is a large aspect of the responsibility in dealing with stories and an acknowledgement of the relationships from

which it comes. Story as form and method crosses cultures. However its application, its use as a method and a basis for the underlying epistemology of a culture, can differ greatly. Context is key to understanding the fullness of the Indigenous paradigm. It is not unique to it, as narrative inquiry, feminism, autoethnography, and phenomenology all value contextualized knowledge. If stories are approached from within a cultural location rather than from without, then accuracy can be maintained and potential harm from misinterpretation minimized or eliminated (Benham, 2007).

Indigenous storytelling can serve very tangible functions in the pursuit of justice from articulations around land claims or treaty negotiations to a truth and reconciliation approach to genocidal programs that targeted Natives such as boarding schools. (Corntassel, Chaw-win-is, & T'lakwadzi, 2009; Iseke, 2011). It asserts a political discourse of sovereignty, a healing discourse that affords recovery from generations of oppression, and those narratives of resistance and resurgence have real world implications for policy and inspiration (Benham, 2007). According to Hooley (2009), "Story as methodology is decolonizing research. Stories of resistance inspire generations about the strength of the culture" (p. 103).

While attending and presenting at the Native American and Indigenous Studies Association (NAISA) conference in 2014, I went to a workshop on digital storytelling. Brenda Manuelito, a Diné woman who was the co-founder of nDigiDreams, an organization dedicated to teaching digital storytelling in Native communities, shared with us her conception of an Indigenous research methodology based on the agricultural trio common to many Native peoples of Central and North America—corn, beans, and squash. As my work with the Seneca students at the ECLC was centered on creating a garden of

Dewënödë:nö:de:ʹ Jöhehgöh (Our Three Sisters, The Ones Who Sustain Us, or corn, beans, and squash[16]), this perspective appealed to me greatly. I spent a pleasant time after the workshop conversing with her and getting more details about it. As she related it, corn represents Indigenous ways of knowing — traditional ecological knowledge, epistemology, and philosophy that is grounded and rooted into the earth. The beans, which grow up the stalks of the corn, represent the methodological practices such as community-based participatory research that both build off of Indigenous ways of knowing and feed it. The squash represents the narrative case studies, the portraiture, which fill in the spaces, and nourishes and protects everything else. This metaphor I found so beautiful and apropos to my study that I often kept it in mind, as I conducted my interviews and worked with the narratives told, in order to keep me connected to an Indigenous methodological perspective.

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[16] For more background on the significance and the practical details of this see *The Iroquois sustainers: Practices of a long-term agriculture in the Northeast* (Mt. Pleasant, 1989).

corn
*Indigenous ways
of knowing*

beans
*community-based
participatory research*

squash
narrative case studies
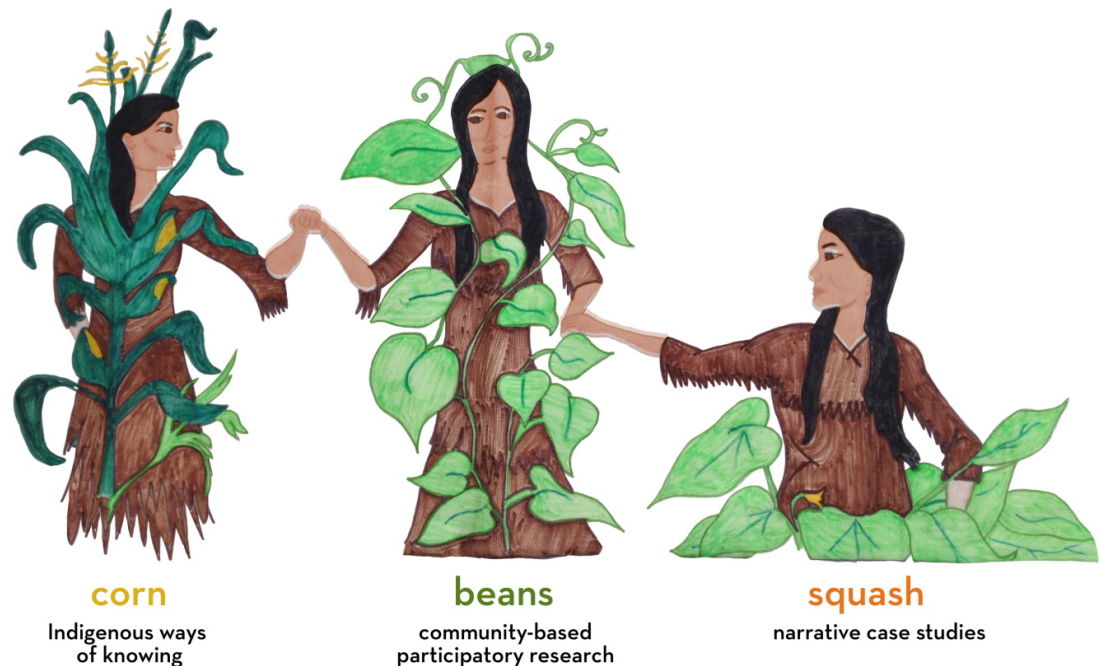
Figure 1. This image is taken from a banner that the ECLC students created to hang in the classroom. The original text said "Gardening Grows On Us" at the top. It is based on a well-known painting by Seneca artist Ernest Smith.

Ethical Considerations

My own ethical and cultural commitments to open and transparent research that honors the voices of the participants was a major factor in choosing narrative and Indigenous methods. This research project required me to maintain a high level of ethical conduct. All of the research participants, including minors (with parental consent, of course), had agreed to forgo anonymity and have their real names used. It was important, from my perspective, that the knowledge being shared through the participants' stories be attributed fully to them. I wanted the participants, as well as their families and communities, to be able to see themselves in the final outputs from the research. They all had valuable stories to tell, and I had a special responsibility to them as the person they trusted in this research process to represent their voices on paper. Fortunately the

university's Institutional Review Board (IRB) was in agreement with my approach and only required minor changes in my initial application to receive approval. However, in my mind, my accountability to the research participants themselves was much more significant

Ethics are strongly emphasized in Indigenous methodologies due to culturally grounded principles of respectful relationships, and also in response to a legacy of research by outsiders that has left a lasting negative impression on Indigenous peoples. Smith (1999), in one of the early published works on Indigenous-centered research, traces the history of research on Indigenous people as a relationship that has been characterized by exploitation, paternalism, disregard, and disrespect. While Western paradigms of ethics are based on concepts of individual rights and property, Indigenous people often articulate community-based and collective views of knowledge and rights that are at odds with these concepts. In the last 20 years many communities and organizations have developed declarations, treaties, and charters establishing standards for the ethical conduct of research, while international law has moved to protect intellectual and cultural heritages from exploitative research (Harry, 2005). The acceptance of ethical guidelines and participatory research agendas has helped foster authentic egalitarian research in Indigenous communities that can generate knowledge that is useful to the research subjects and their communities, and does not solely benefit outsiders.

From anthropologists who made life-long careers from researching living communities in exploitative and nonreciprocal ways[17] to biomedical prospectors seeking to profit from the commoditization and patenting of Indigenous knowledge about medical botany for the benefit of pharmaceutical companies, to the extraction of DNA,[18] research in its various guises has served as a key aspect of colonialism and imperialism (Battiste, 2008). In addition to professional scientific research, Smith (1999) mentions that communities have also had to contend with "amateur collecting, journalistic approaches, film making, or other ways of 'taking' indigenous knowledge that have occurred so casually over the centuries" (p. 2). The present-day legacy of trauma from these interactions is a wary skepticism about research in Indigenous communities, sometimes even when conducted by an Indigenous person, since some early projects with Indigenous researchers were still based on Western paradigms and methodologies. Over time, synthesis and evolution has taken place, culminating relatively recently in articulation of decolonizing Indigenous methodologies (Wilson 2008).[19]

Narrative inquiry and other qualitative researchers also give significant consideration to the issue of ethical research from the perspective of relationships, which parallels Indigenous methodologies. Clandinin (2007) states that "narrative inquiry is a profoundly relational form of inquiry. Therefore, ethics plays a central role throughout

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[17] See Biolsi and Zimmerman (1997), *Indians and anthropologists: Vine Deloria, Jr., and the critique of anthropology*. Deloria, a noted Lakota essayist and scholar, was a sharp critic of the exploitation and misrepresentation of Native communities by anthropologists and other non-Native academics.

[18] See Harry, Howard, & Shelton (2000), *Indigenous people, genes and genetics: What indigenous people should know about biocolonialism: a primer and resource guide*. It provides an excellent overview of issues pertaining to human and plant genetics from an Indigenous perspective.

[19] To place the changing times of Indigenous academe in perspective, in 2007, more Indigenous students earned doctoral degrees from the University of Alberta than had ever graduated from that school in its entire history, which to that point was a grand total of three, despite being surrounded by literally dozens of First Nations reserves (Wilson, 2008).

and beyond the research process" (p. xvi). Josselson (2007) adds that "ethics in narrative research . . . is not a matter of abstractly correct behavior but of responsibility in human relationship" (p. 538). Relationship is central to methodology and axiology in both the Indigenous and narrative paradigms. Ethics can be seen as a relational accountability that entails "3 Rs": respect, reciprocity, and responsibility (Wilson, 2008). Respect for the beliefs and sensibilities of the participants is essential for a research endeavor. By being reciprocal, the study gives back to the researched just as the researcher benefits. Responsibility means the researcher takes seriously their charge to represent the participants' knowledge fairly and accurately and to not abuse the trust of the relationship. Relational responsibility protects participants better than abstract or concrete policies (Clandinin & Connelly, 2000; Josselson, 2007). Echoing and expanding upon the earlier assertions of King (2005) regarding situational appropriateness of traditional Indigenous stories, according to Wilson (2008),

> Accountability is built into the relationships that are formed in storytelling within an oral tradition. As a storyteller, I am responsible for who I share information with, as well as for ensuring this it is shared in an appropriate way, at the right place and time. In receiving the story, you as an active listener are responsible for putting the story into relational context that makes sense for you and for listening with an open heart and open mind. (p. 126)

It is clear that in both research paradigms, relationship is not just a key component, but is the driving force behind ethical practice. The intimate nature of narrative sharing and relationship building personalizes the research process in these contexts, necessitating a moral code and practice that includes all involved parties in a respectful and considerate way.

One major difference between Indigenous and narrative methodologies concerns the issue of confidentiality. While there are some cases in Indigenous research projects

where anonymity is desired,[20] in most instances participants want to be identified, and it would be culturally inappropriate for them not to be. *Who* is sharing the knowledge is important for the reader to know, or the story can lose its power and authoritative voice. Identification is a part of the accountability process whereby participants and community members at large can transparently see the lines of relations as to who is telling what information as part of the continuing cycle of community-held knowledge production, as well as validity (Kovach, 2010; Smith, 1999; Wilson, 2008). Chilisa (2012) argues that there should be an

> emphasis on revealing their names so that the knowledge in the study can be traced to its originators. From a relations with people perspective, the information imparted, or story offered, would lose its power without knowledge of the teller; and thus, the reason why the researched do not want to be anonymous. (p. 119)

This approach contrasts with most Western academic research, where anonymity and confidentiality are of the utmost importance — in fact Josselson (2007) highlights them as one of the three main components of ethical narrative inquiry research. Although this is a significant point of divergence for the two research paradigms, both my personal background and the purpose of the research favored the Indigenous methodological preference for using names.

While IRBs have historically been responsible for upholding ethical standards for research on humans and ensuring compliance with them, both Indigenous and qualitative researchers have encountered limitations to that paradigm. IRB protocols are fundamentally focused on issues relating to betrayal, deception, and harm in the research process, as well as holding researchers accountable to institutions and disciplines rather

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[20] Such as projects involving survivors of incest or domestic violence, or other sensitive issues.

than to research participants (Wilson, 2008). They are rooted in medical and health-related research that does not necessarily fit well with social science research goals and needs. Risks and benefits in a narrative inquiry study are often hard to predict. Additionally, as the study goes through the organic process of fieldwork, it may turn in unanticipated directions. Fieldwork is not as easily controlled as experimental studies. Therefore such work requires an ethical mindset rather than a rigid set of guidelines (Josselson, 2007). Denzin and Lincoln (2008) find a common thread regarding shortcomings of the IRB paradigm:

> One hopeful sign is the congruence in conclusions between Western researchers (primarily if not exclusively qualitative, alternative paradigm, and/or critical) and First Nations peoples around the world, both groups of whom have recognized that Western Principles embodied in Protections of Human Subjects legislation regarding ethical behavior are insufficient either to protect research participants — especially indigenous peoples — or to provide appropriate cultural sensitivity to non-Western lifeways, customs, and cosmologies. (pp. 568-569)

The ethical concepts emerging from an Indigenous paradigm connect a moral compass to a set of political and research actions that have the potential to increase knowledge and well-being through collaborative, participatory inquiry.

Although narrative inquiry researchers have run into a variety of problems with IRB boards, anonymity has rarely been an issue. Additionally, the explicit nature of a typical consent form can be challenging for narrative researchers. The problem of balancing the general phrasing needed at the beginning of research with a flexibility to be open to the possibilities that arise during the course of research is not insurmountable, but needs careful attention, as "translation into specificities is what unearths the fissures and uncertainties in this minefield" (Josselson, 2007, p. 540). Additionally, warnings to potential participants about harm reduction and proper recourse can be potentially off-

putting in the context of a narrative inquiry project. At the least, they may plant the suspicion that the interview is potentially problematic, thereby skewing the openness of the response and the relationship between the researcher and the participants. Josselson (2007) illustrates one of the classical problems with IRB protocols, asserting that it is more unethical for an inexperienced researcher to be advising a person when he or she should seek mental health care than to not tell (paternalistically, I would add) the person that the interview may bring up some painful memories.

In addition to these issues with consent forms, all of which may pertain to Indigenous research, they contain another potential problem for use with Indigenous subjects. Some community informants to a project may feel candid in sharing their views and trust that an Indigenous researcher will honor their word to them. However, they may be reluctant to sign an IRB consent form because they distrust the motives and ethics of the institution due to personal or historical breaches of trust or just a general distrust of Western institutions (Wilson, 2008). Tape-recorded consent is a method that may work in those cases. In my own experience interviewing people as a documentary filmmaker, asking a person to sign an "official" release form typical of the media industry can be off-putting, so it is less intrusive to get recorded oral consent. For this research study, the trust that I had built with the participants made them feel comfortable with signing the relatively standard consent forms that I was using. I worked to create the sort of research relationship where participants "feel cared for and have a voice with which to tell their stories" (Connelly & Clandinin, 1990, p. 4).

Research Design

Research Questions

Devising my questions proved to be quite difficult. I was deeply personally invested in all of the research sites, and there were many aspects of them that I found compelling and worthy of inquiry. Initially I created a document filled with a wide variety of questions. With time, I narrowed my questions down to a set that seemed to `precisely at the core topics of interest that thematically connected the three research sites. The following meta-question and subquestions were developed through an iterative process (Maxwell, 2005) as the research unfolded.

What were the experiences and perspectives of participants in programs that utilized a combination of digital storytelling and Indigenous ways of knowing to foster environmental learning?

- What aspects of these programs did participants find engaging and meaningful?

- How did hands-on learning experiences and mentoring interact with the digital storytelling aspects of these programs?

- How do participants in these programs articulate their identities and sense of ethics in relation to the environment?

- How did participants experience a sense of empowerment?

Sites and Participants

The participants in this study were purposefully selected from three educational sites that had particular characteristics and relevance for answering the above research questions. All three of them utilized Indigenous ways of knowing and digital storytelling in the furtherance of environmental learning. Additionally, I was the instructor or facilitator for those learning experiences, so I had fostered relationships of trust and

camaraderie with the youth participants. A description of these community programs and their educational approaches follows.

Green Guerrillas Youth Media Tech Collective

The Green Guerrillas Youth Media Tech Collective (2006-2011) was an after-school job-training program founded to meet the needs of at-risk adolescents of color in Ithaca, NY. It was funded and administered by a nonprofit organization, Southern Tier Advocacy and Mitigation Program, which was established in response to the increasing frequency with which young people of color were being referred to the juvenile justice system. The participants in the program were from low-income and working-poor families. Twenty-five high school students participated in this educational program during the period of 2006-2011. Seven of the students participated in the program for more than one year. The activities of the group from 2006 to 2008 were the subject of a narrative case study for my master's thesis. I maintained contact after the program ended with several participants who remained deeply connected to their identity as members of it and wanted to hold reunions. In 2014, follow-up interviews were conducted to document the participants' views on what they had experienced in the program.

When the program was conceived we had not been exposed to any of the literature on environmental education beyond the work of Cajete, whose work I began reading as an undergraduate. The pedagogical practices in GGs were primarily informed by our backgrounds in social justice, environmental activism, activist media production, and our exposure to Indigenous cultures. We felt an integrated, holistic approach to learning in the group, with a hands-on experiential emphasis, would be the most effective way of raising environmental awareness and promoting ethical behaviors. Therefore,

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Indigenous knowledge, culture, philosophy, and traditions were incorporated into the ideology, curriculum, and praxis of the GGs. The teenage participants were exposed to a variety of critical perspectives on environmental and social issues through researching topics, group discussions, and interviews with filmmakers, activists, and Indigenous people. We integrated a number of the threads that were highlighted in Chapter 2 regarding critical, Indigenous, and multicultural approaches to environmental education. As the development of the group coincided with my graduate studies, I found both reassurance and growth in my development as an educator through exposure to a wide variety of scholars and practitioners. In the GG's activities, stories were central to learning and educating others about how to use resources sustainably and in the development of critical consciousness about issues of eco-justice and advocacy skills to effect change. ChiXapKaid (2005) notes that the processes of storytelling and learning the meaning of stories get students more engaged with learning, but are also a part of a decolonization praxis. Placing the study and creation of stories at the center of the learning process was one way we "indigenized" the program; that is, incorporated an Indigenous pedagogical practice. One example of the use of stories as a component of decolonial and eco-justice minded education was the investigation that the teens did on the Zapatista movement in Chiapas, Mexico. The GGs found and viewed a variety of videos that told the stories of the Zapatistas' struggles to protect their natural resources and human rights and of their desire to preserve a record of their cultural practices, traditional songs, and mythopoeic stories. The videos also outlined their histories of oppression, their motivations for resisting the implementation of NAFTA and engaging in rebellion, and their demands for land, freedom, dignity, and justice. The GGs particularly

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appreciated the short videos made by Promedios/Chiapas Media Project on subjects such as agricultural collectives, fair trade coffee, women's collectives, autonomous education programs, traditional healing, and the local histories of their struggles for land. After watching videos and movies we would have sometimes lengthy discussions about the material and the ideas expressed. These dialogues afforded the participants opportunities to critically reflect on complex connections between social, political, and economic issues as called for in critical, multicultural, and Indigenous models of environmental education. I observed that, as a group of people of color working for justice and sustainability in the world, they were inspired that the arguably most successful rebellion in their lifetime was being conducted by a group of the poorest and most marginalized Indigenous people in Mexico and that they were using communications and storytelling to reach and educate the world.

Emerging Indigenous Leaders Institute

The Emerging Indigenous Leaders Institute was created in 2008 by Dr. Debra Harry of the Pyramid Lake Paiute as a program for Indigenous young adults in the Great Basin region of Nevada. It also uses the name Pesa Nadayadu Poinabe Madabwe, which means "making good strong leaders" in Paiute. The organization's website gives the following description (Emerging Indigenous Leaders Institute, 2014a):

> The Emerging Indigenous Leaders Institute (EILI) is a program designed to cultivate a new generation of leadership committed to the protection and perpetuation of the rights, culture, and lifeways of Indigenous peoples. The EILI is founded on the principle of Indigenous-centered education and creates the opportunity for young Indigenous peoples to ground themselves in their own Indigenous knowledge systems, and utilize their culture as the foundation for learning and knowing.
>
> The program develops transformative leaders who will make positive change in relation to their communities in a constructive manner. Indigenous leaders in

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service to their community must exemplify certain values such as respect, honor, compassion, and love for their people and land. They must also be able to think critically about our current realities and envision a future that benefits us all. A responsible leader is accountable to his or her community. The Numu (Paiute) word "poinabe" actually means one who speaks for the people and the rest of the natural world.

The program has held training sessions for three cohorts of college-age students from the Paiute, Washoe, and Shoshone nations in 2008, 2009, and 2012-2013. Many of the graduates have gone on to take cultural and political leadership roles in their communities.

EILI focuses on foregrounding an Indigenous pedagogy. The areas of focus and goals of the program are said to be carried by the students in a traditional basket, the making of which is taught both literally and figuratively in the students' coursework. EILI offers the following description of its holistic educational objectives based on Indigenous ways of knowing (Emerging Indigenous Leaders Institute, 2014a):

The EILI LEADERSHIP BASKET

- A Leadership Model for Transformative Action in Indigenous Communities -

Utilizing the *wono* (cone-shaped willow basket) as a metaphor**,** the EILI helps Indigenous leaders to collect the appropriate tools in their basket needed to be skilled, knowledgeable, and effective leaders in their communities, and to nurture for positive community transformation. The EILI pedagogy is based on Indigenous-centered education and focuses on the following areas of development:

1 - Healthy Living

Develop the mind, body & spirit of an individual, nurturing the whole person, as essential components of a strong leader

2 - Native Culture & Spirituality

Nurturing cultural identity through exposure to Native language & cultural heritage

3 - Content-based knowledge

Developed by exposure to historical & contemporary issues presented from Indigenous perspectives

4 - Skill-based Knowledge

Research, writing, analytical, oral, digital media, interpersonal, and advocacy skills

Program Goals and Objectives

1. To empower Native with knowledge and skills to effectively create positive community change.

- To develop students' knowledge base related to the unique political, legal, cultural, social, and economic contexts of Indigenous peoples.

- To develop oral, written, analytical, technical and interpersonal skills necessary for effective leadership.

2. To cultivate Native leaders who will exercise their leadership based on cultural principles and values.

- To develop students' cultural identity and knowledge through exposure to Native history, language, cultural practices, and spirituality.

3. To provide Indigenous-centered educational opportunities for Native peoples in Northern Nevada.

- To offer courses developed and taught by Indigenous educators, leaders, and cultural practitioners.

- To provide students with practical experience through internship placements with Native organizations and mentors.

4. To create an organic model for effective leadership development appropriate for Native peoples in Northern Nevada, which may be replicated in other Native communities.

- To design, implement, evaluate, and document core elements of a program for leadership development that addresses the unique needs and circumstances of Indigenous peoples.

Dr. Harry is well known in her local community, as well as the national and international arenas, for her advocacy on behalf of Indigenous peoples' rights, particularly in regard to issues of genetics research and international law. She is the founder and executive

director of the Indigenous Peoples Council on Biocolonialism, a North American representative to the United Nations Permanent Forum On Indigenous Issues, and the co-producer of a documentary about biocolonialism entitled *The Leech and the Earthworm*. She has utilized her connections in these various arenas to bring together a wide variety of Indigenous leaders and experts in their fields from both the local nations and others throughout North America to teach the various EILI course modules. For the most recent cohort (2012-2013) these modules were: Indigenous Nation Building, Indigenous Peoples Rights: International and Domestic Contexts**,** Indigenous Wellness and Healthy Communities, Indigenous-Centered Education, Sustainable Indigenous Families and Communities, and Non-profits and Alternative Models for Community Development. I have been a visiting faculty member since EILI's inception in 2008, conducting the final workshop and capstone project, which is focused on digital storytelling. All of the participating students learn basic filmmaking skills (camera, sound, and editing) and are coached through the process of creating a digital story drawn from their own lives and experiences in the program.

While EILI is first and foremost a leadership development project and not explicitly an environmental education program, the deep intrinsic connection to land and environment for Indigenous peoples is apparent throughout the program's coursework. The description for the course module entitled Indigenous Wellness and Healthy Communities states, "This course also addresses Indigenous Peoples' connection to our lands and territories as a key aspect of wellness. Our students will explore the concept that the health of the land will reflect the health of the people." This framing of the program's curriculum aligns with the goals of teaching about complex, interdependent

relationships between humans and the environment as articulated by many environmental education theorists cited in the previous chapter. The Sustainable Indigenous Families and Communities course module is quite explicit in its articulation of an environmental education agenda (Emerging Indigenous Leaders Institute, 2014b):

> In this course students will examine the concept of "Sustainable Indigenous Families and Communities" grounded in their own histories of sustainability, cultural belief systems and traditional Indigenous knowledge systems in relation to issues concerning food sovereignty, the importance of traditional Indigenous foods for health and wellness, sustainable agriculture, food security and food safety. As well, students will research and examine various Indigenous model projects that address the food production needs of Indigenous communities including seed saving and sharing, permaculture design, community gardens and organic farming. Students will also examine and develop a deeper understanding of what sustainability means for Indigenous families and communities within the frameworks of eco-friendly and culturally-appropriate land and water uses, renewable energy and non-renewable energies generating systems, energy justice, waste management, "green" homes, and biodiversity conservation. The last component of this course will engage students to conceptualize and reconstitute their own vision of 'Sustainable Indigenous Families and Communities' grounded in their own cultural belief systems, traditional Indigenous ecological knowledge systems and practices. (punctuation as in original)

It is clear that EILI's pedagogy includes a strong focus on environmental education with emphases on both traditional knowledge and contemporary topics, such as environmental justice, renewable energy, and green building. Personal connection to the land and nature through the lens of culture was a subject explored in several of the digital stories produced by the students in my workshops.

Seneca Nation of Indians Cattaraugus Territory ECLC

The Seneca Nation of Indians (SNI) has five territories, two of which are residential (Allegheny and Cattaraugus) and three of which are used for economic development ventures (Oil Springs, Niagara Falls, and Buffalo Creek). The Tonawanda Band of Seneca maintains a separate government based on traditional chiefs and clan

mothers and has their own territory. In 2013 the SNI Planning and Economic Development Department, in conjunction with the Seneca Diabetes Foundation (a nonprofit organization), initiated a program called Food Is Our Medicine (FIOM) with the objective of promoting community gardening and healthy eating to address an epidemic of diabetes, obesity, and other diet-related health issues. I began volunteering at the newly created community garden located at the Cattaraugus Community Center in the summer of 2013. While doing that work I learned that the Cattaraugus Early Childhood Learning Center (Cattaraugus ECLC) had embraced gardening as an integral part of their curriculum. With support from FIOM, as well as the hard work and passion of the after-school program coordinator at the time, Chad Nephew, each classroom was provided with a raised-bed garden box, where they have cultivated a variety of traditional and other plant foods. In 2013 they showcased the results of their work on a float during the Seneca Nation Fall Festival parade and won first place.

The Cattaraugus ECLC building was erected in 1997 and its programs are supported financially by a combination of SNI and federal funding. It has daycare and Head Start facilities, as well as after-school programming for Seneca students (K-8) who go to the local public schools off the territory in three different districts: Gowanda, Silver Creek, and Lakeshore. The after-school programs are divided into three classrooms based on age grouping. Each classroom serves up to a dozen students and offers a space for doing homework, having a snack, and doing a variety of recreational activities. The staff are encouraged to incorporate Seneca language and culture into the activities. Tutoring is also provided for students by staff from the SNI Education Department, which is located in an adjacent building.

In fall of 2013 I began working with Chad in developing a digital storytelling project for the After School 3 classroom focused on their gardening and Haudenosaunee agricultural traditions. This classroom had the oldest students at ECLC, which was a necessity because of the demands and maturity required to make a video. The teacher for that classroom, Dee Dee Parker, was enthusiastic about the idea. This project would expand beyond the garden boxes with a quarter-acre field planted primarily with corn, beans, and squash. All aspects of the gardening would be documented by the students with still cameras, video cameras, and iPads. The necessary staff at ECLC approved my proposal in early 2014. I worked with these students, ages 8-12, one to two days per week from March 2014 until November 2014. During that time I taught them how to use the ECLC's recently acquired iPads, the classroom's own flip video camera and still camera, as well as two flip cams that I brought with me to each session to document our project. The garden-based learning experiences focused on a centrally important Haudenosaunee agricultural tradition—the intercropping of corn, beans, and squash, known as the Three Sisters. the project on a fundamental cultural practice, and enlisting the assistance of an older and highly knowledgeable farmer in the community, students were able to experience several aspects of an Indigenous environmental education, including intergenerational mentoring, having an activity that connected them to nature while demonstrating the relevance of ancestral environmental perspectives, and learning about the connection between land and food. I conducted participatory ethnographic observational research during the course of the project, writing about my observations in a field journal. Toward the end of the project, once harvesting was complete, I conducted

semi-structured interviews with both the students and the teacher of the After School 3 classroom.

<div align="center">Data Collection Process</div>

I utilized a variety of data collection techniques in this study: visual narrative (video) analysis, participant observation, autoethnographic exposition, and interviews. In my research with the GGs I focused solely on face-to-face semi-structured interviews. For EILI I relied on visual narrative analysis of student videos, my own exposition on the narrative I could tell as an instructor, and an emailed questionnaire of open-ended questions. With the Cattaraugus ECLC project I used participant observation and interviews. I employed in-depth interviews with the GG participants as the primary method of data collection, because their ages and long-term participation in the program made this feasible. Also, it was possible to construct a more detailed and targeted semi-structured interview due to my long involvement with the program and because key concepts and themes had emerged from my previous interviews and narrative analysis for my master's thesis. For EILI I relied heavily on the videos created by the students, supplemented by their written responses to my questions, and with a narrative thread woven in based upon my own recollections of my experiences as an instructor. With the Cattaraugus ECLC the richest data were my field journal as a participant observer and an interview with the teacher for that group of students, as the students themselves due to their age (except for the oldest one) were only able to provide limited responses to my interview questions.

Mears (2009) has discussed the concept of the "gateway interview" as providing a space for interviewees to open up and explore the fullness of their experience through the

connections they share with the interviewer. The researcher must have deep knowledge

and appreciation for the interviewees and the research subject. This idea appealed to me,

especially since my work in documentary filmmaking sought to gain deep insights into

my subjects through the development of a high level of rapport. As cognitive meaning

and perception are just a fraction of the fullness of human experience, the gateway

interview provides an opportunity to open up to the "social, emotional, physical,

psychological, spiritual, and other qualities of the experience. Its attention to the voices of

those who lived an event or circumstance contributes the potential to share a more

holistic understanding of the complexities of life situations" (Mears, p. 153). This was

most applicable to the kind of in-depth interviews I was able to do with the GGs.

Before setting out to do the formal data collection that supports the body of this

study, in order to help shape the lines of inquiry of the study, I examined initial

contextual data in the archival media records of the participating organizations. This

included text on websites and blogs, photographs, and videos on DVD and YouTube. As

Riesman (2008) has noted, the examination of images along with spoken and written

texts can help reveal deep information about individual and collective identities, which

are key areas of inquiry for this project. These materials informed the preparatory process

for the research, such as the development of research and interview questions. In addition

they provided memory refreshment and background information for my personal

narrative. The GGs shared their stories with the public in the form of four feature-length

movies, which were presented in public showings locally as well as at conferences and

events we traveled to. These videos were distributed on DVDs and a YouTube Channel,

which contains excerpts from the DVDs and several other videos we produced. There

was also a wealth of brochures, radio shows, and blog postings as well as entrance and

exit surveys and interviews of participants, plus my own notes kept for documentation

during the course of the program. In the case of EILI I relied primarily on the

organization's website for doing background research. For the Cattaraugus ECLC I had

only a set of photographs from the first year of the garden-based learning project and my

notes from my initial conversation with the after-school program coordinator and the

After School 3 classroom teacher to draw from.

Green Guerrillas Youth Media Tech Collective

I utilized purposive sampling in identifying who from the group would be

interviewed for the study. Patton (1990) states that the

> logic and power of purposeful sampling lies in selecting information-rich cases
> for study in depth. Information-rich cases are those from which one can learn a
> great deal about issues of central importance to the purpose of the research, thus
> the term purposeful sampling. (p. 169)

There were approximately 25 youth who participated in GGs during its five-year

existence. Most of the youth participants were in the program for approximately a year.

For some it was only for a summer session. I focused on interviewing seven who were in

the program the longest. All of them had experiences of over a year, including one

participant, Kierra, who was involved for close to the entire five years. This subset of

veteran alumni had also maintained connections with each other and me well after the

program had ended. Their perspectives contain what Rudestam and Newton (2007, p.

107) term "experiential relevance" to the study. My objective for this study is not to

establish linear cause and effect relationships between program practices and outcomes,

but to elucidate the inner workings of its pedagogy through a rich description of the

experiences (and their ascribed meanings) of the people who had the most sustained engagement with it.

In January of 2014 the GGs (five youth participants and two adult mentors, including me) held a reunion in Ithaca, where we shared a meal while watching a slide show of approximately 900 photographs that I had selected as being the most representative of our work and experiences. We reminisced about our shared times in the group and discussed the nature of my research and its goals. I read them a draft of the interview questions I had developed and solicited their feedback. Some minor modifications were made to those questions based on their input.

Throughout the summer of 2014 I conducted a series of dyad interviews with six of the youth participants of the group. The choice of interviewing in pairs was based on my experience with them; I knew that their responses would be richer in a setting where they were with a peer. I chose the three pairs based on similarity of temperaments. These interviews were semi-structured, based upon the set of questions I had developed and discussed at the reunion, with room left open for tangents and new questions based on responses to be explored.[21] The preliminary set of questions was directly related to my research questions and was used to prompt for narratives that connected to those lines of inquiry. However, there was also flexibility and openness so that new, previously unanticipated information could shape the organic development of the research process. As the youth alumni of the program were now adults, they were presented with IRB-approved consent forms at the time of the interviews, which they all willingly signed.

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[21] See Appendix 1 for the interview questions used with the GG participants.

One youth participant was incarcerated at the time I was doing the interviews. I knew from experience that state regulations would not permit the use of a recording device to document an interview, so I had to choose between conducting the interview by mail and attempting to transcribe a true dialogue approximately by taking notes. I chose the correspondence, which resulted in a rich response from him about his experiences. Given the mundane nature of day-to-day prison life, he appreciated the opportunity to reflect on a time in his life when he was engaging his skills and creativity in a dynamic manner.

In August of 2014 we held another GG reunion, where we watched some of our videos, and I recorded the group discussion as a group interview. Four of the six participants who gave interviews in the dyad groupings attended. One GG who was not in the interview dyads came to the reunion and participated in the group interview. His participation in the program was limited, as was his input to the interview. He had just happened to hear about the reunion and wanted to reconnect with old friends. Therefore he is not included in the study. The discussion was a free form and dynamic exchange without people interrupting each other or dominating the conversation.

I interviewed two adult mentors individually, also following the semi-structured format. While I touched on some of my own perspectives regarding the GGs in Chapter 1, I felt that this study would also benefit from my own narrative about my experiences that could complement the statements of the other participants. I asked Kierra, the participant who had the longest experience in the group, to write interview questions for me to guide

and focus what I would write.[22] In the program Kierra was known for her research skills and interviewing acumen, both in the development of questions and in conducting video interviews. Kierra's skills and deep insight into the program made her the obvious choice for this task. This was an opportunity for engaging in a participatory research process that honors the wisdom of the study participants, while also providing another angle to add more depth to the ethnographic description. I shared the research questions with her and some of my thoughts about the whole study, which she used to inform the types of questions she asked me. This process allowed for me to take a step back and let another mind explore what kinds of questions would produce worthwhile responses that would serve to answer the research questions. My responses are utilized in the contextualization and analysis of the material from the interviews and become part of the collective narrative tapestry that is that chapter.

Emerging Indigenous Leaders Institute

The 2008 and 2009 EILI cohorts had each produced a DVD of student-created digital stories under my direction on the last day of the training. The 2012-2013 cohort had not completely finished editing their projects during that workshop I led; however, I was later provided with digital copies of all of them. I watched the videos several times, while taking notes, and constructed a narrative analysis of each one. I also wrote an autoethnographic free-form essay about my experiences that served as the foundation for the chapter about that research site. I reviewed photographs of those workshops as well as

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[22] These questions are also included in Appendix 1.

my curriculum notes to help me reconstruct what had taken place. In March of 2015 I

utilized written questionnaires with six EILI alumni who had agreed to participate.

Seneca Nation of Indians Cattaraugus Territory ECLC

I conducted interviews at the Cattaraugus ECLC in October and November 2014

after we had harvested all the crops from the garden and finished making the video

showing the steps from sowing to harvest. We were still engaged in shelling corn for use

in soup and braiding corn for storage, but now all our activities were inside the classroom.

All available students had parental or guardian consent to be interviewed.

When it came time to do the interviews, there was some attrition. I recorded one-

on-one video interviews with the seven willing and available students and Dee Dee

Parker, the lead teacher.[23] We also did a group interview where we watched the video of

the project we had made and paused it at different points to discuss what they

remembered about different moments. The individual interviews did not yield much

narrative data, since only the oldest student spoke at length about the project. The others

gave brief answers to my questions and prompts.

My research journal of participant observation field notes for the Cattaraugus

ECLC site was treated as a form of autoethnographic and narrative data, as the project

there was something that I created and facilitated. My notes were more than just

observations of the students and staff involved, as they also documented my thoughts and

actions as an educator in conducting the garden and digital storytelling-based learning

project.

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[23] The interview questions for this site are in Appendix 2.

Data Analysis

Alexander (2004, p. 47) states that "data analysis in qualitative research has a twofold purpose: a) to understand the participants' perspectives, and b) to answer the research question." To achieve this, the data must be organized and interpreted. Creswell (2009) encourages researchers to employ other procedures beyond a generic analysis involving collection of data and analyzing data for themes or perspectives. To achieve a deeper understanding of the data and its broader contextual meaning, he states that other strategies of inquiry could be added such as grounded theory, case study, or narrative inquiry. For this study, in addition to transcribing and coding themes from interviews I conducted with the GG participants, I retold their stories as they wove into each other and my own exposition on my experiences in the program to create a rich and thickly descriptive overarching narrative. I reflected upon the meanings the students ascribed to their experiences in the program to generate grounded theory. For the data from EILI and the Cattaraugus ECLC, I also looked for themes that emerged from my portraits of the participants and descriptions of the teaching experience and class activities to develop grounded theory from those sites. In doing so I knew I needed to be mindful of the whole concept of data analysis. Recalling narrative inquiry's phenomenological roots, I took heed of the caution that the "term [analysis] usually means a 'breaking into parts' and therefore often means a loss of the whole phenomenon . . . [whereas 'explicitation' implies an]...investigation of the constituents of a phenomenon while keeping the context of the whole" (Hycner, 1999, p. 161, as cited by Groenwald, 2004, p. 17; text in brackets is the latter's). I knew that it was my goal to provide a view that was holistic in nature of

the rich and dynamic pedagogies at each of the sites, while also staying focused on the

research questions.

All of the interviews were recorded using a digital video camera. I extracted the

audio component into individual files and meticulously transcribed them in their entirety.

Seidman (2006) says that

> to work most reliably with the words of participants, the researcher has to
> transform those spoken words into a written text to study. . . . To substitute the
> researcher's paraphrasing or summaries of what the participants say for their
> actual words is to substitute the researcher's consciousness for that of the
> participant. (p. 114)

Only filler words, such as "like," were edited out when they did not contribute to the

response or were functioning as pauses while the speakers gathered their thoughts.

Providing punctuation for the oral delivery during transcription is one of the first steps in

the analysis and interpretation of the material and must be attended to thoughtfully

(Seidman, 2006). While editing the transcripts I reviewed the text while listening to the

corresponding recording to verify the accuracy of my punctuation for any passages that

seemed ambiguous.

The concept of dialogic narrative analysis (DNA) informed my process of

working with the meanings embedded in these stories as it approaches stories as "artful

representations of lives; stories reshape the past and imaginatively project the future"

(Frank, 2012, p. 33). A crucially important aspect of DNA is that it focuses on "how to

speak *with* a research participant rather than about him or her" (Frank, p. 34, emphasis in

original). The process of writing and analyzing for descriptive and thematic content was a

recursive process, where a conscious tension was maintained between dialogue and

analysis. What is meant here by dialogue is not literal back and forth conversation, as one

is working with a textual narrative at this stage in the research process; rather it is a

mindset that places the researcher's own writing about the interview in conversation with

what the interviewee is conveying. Instead of taking a detached and objective stance, the

researcher strives to uncover the various layers and aspects to the story being related and

to be consciously aware of the process of representing it. Frank (2012) states that DNA

seeks to relate the practical wisdom within the story.

> Phronesis is practiced — and it is a craft, not a procedure — in an iterative
> process of hearing stories speak to the original research interest, then representing
> those stories in writing, revising story selections as the writing develops its
> arguments, and revising the writing as those stories require. The analysis of the
> selected stories takes place in attempts to write. The research report is not post
> hoc to an analysis that is completed before writing. Rather, reports emerge in
> multiple drafts that progressively discover what is to be included and how those
> stories hang together. In DNA, stories are first-order representations of life, and
> writing about stories is a second-order act of narrative representation. (p. 43)

I sought to be highly attentive to how I was approaching the narrative data of this study

(whether from an interview or a digital story) and representing it in the crafting of the

following chapters that focus on each research site.

Dialogic narrative analysis aims to look at the broad context and issues of identity

and self-representation that are embedded in participants' stories. There are four essential

questions that DNA seeks to elucidate, while maintaining an understanding that all stories

are in response to an audience, whether present or imagined:

> First, what multiple voices can be heard in any single speaker's voice; how do
> these voices merge, and when do they contest each other? Second, what makes
> stories distinct from other forms of narration; what counts as a story, and what
> does not? Third, why is someone choosing to tell a story, among other expressive
> possibilities? What particular capacities of stories does the storyteller seek to
> utilize? Fourth, what stakes does the storyteller have riding on telling this story, at
> this time, to these listeners? Or as I prefer to phrase it, How is the storyteller
> holding his or her own in the act of storytelling? By *holding one's own,* I mean
> seeking to sustain the value of one's self or identity in response to whatever
> threatens to diminish that self or identity. Groups also hold their own by means of

their stories; thus, how do stories create group identities and boundaries. (Frank, 2012, p. 33, emphasis in original)

The personal meanings for participants in this study are important, as are the broader narratives and social meanings within which they interact. I applied categorizing and connecting analyses in order to provide a holistic view and accounting of the narrative data that speaks to the particular context of the inquiry, as well as connecting them to broader theoretical themes (Maxwell, 2005).

The process of transcribing the interviews and group discussions afforded me the opportunity to reflect on the narratives and ideas that were emerging. Once all the interviews were transcribed, I utilized ATLAS.ti software (version 7, ATLAS.ti Scientific Software Development GmbH) to code them, as well as my own expositions on the GGs and EILI, and my field notes from the Cattaraugus ECLC, while seeking out themes. Richardson (1994) notes that writing itself is a process of discovery — a way of knowing. More than a simple reflection of reality, it is, in fact, creating reality. Therefore it is important for me as the author of this dissertation to be aware of the power carried by these words that have been selected and used to construct this story. My aim, through careful attention to the dynamics between my voice and those of the other research participants, is to co-create an authentic representation of our shared reality in these learning environments in what you are reading.

Validity: Verification Procedures

To check the accuracy of the initial conclusions I reached about the relationship of Indigenous ways of knowing and digital storytelling in the context of environmental education, I used several verification procedures. To verify that the conclusions I reached were credible, i.e., that they accurately described the students' perspectives, made sense,

and accurately represented the programs under study, I relied on triangulation and member checking. The use of three sites that provided different sources of data and convergent themes increased the validity of my findings. Analyzing documents and viewing videos that were made prior to the onset of the study enabled me to have a better understanding of the goals of the educational programs and perspectives of the students, apart from any bias related to my study goals. Reflexivity allowed me to clarify my biases in the presentation of findings. Thick descriptions of students and teachers and their multiple perspectives, my prolonged involvement with each program, and the use of a peer debriefer all contributed to the validity of my interpretations of the data (Creswell, 2009).

In the spirit of accountability and transparency it is important to note again my dual role as researcher and educator in the programs under study. Relationships with research participants can significantly affect the way we know what we claim to know from our research (Hart, 2002). Creswell (2009) also cautions that the potential problems in conducting research with one's own organization, friends, or workplace are extensive. He states that "this often leads to compromises in the researcher's ability to disclose information and raises difficult power issues. Although data collection may be convenient and easy, the problems of reporting data that are biased, incomplete, or compromised are legion" (p. 177). He stresses the necessity of multiple strategies of determining validity in this type of research. I utilized critical self-reflection (often termed reflexivity in the literature), triangulation, member checking, and thick description to achieve a high standard of validity. Additionally, my prolonged engagement in the field with all three

research sites afforded me an in-depth understanding and ability to convey rich context and detail to further support this study's validity.

Obviously no pretenses of detached objectivity can or should be made in this context; therefore, I will be as explicit as I can in the following chapters about my potential oversights, biases, and reactivity (Maxwell, 2005), as well as the role of my voice and subjectivity. Riesman (1993) stresses that investigators must engage with difficult issues around power, interpretation, and representation and make them open to examination by the reader.

> Whose voice is represented in the final product? How open is the text to other readings? How are we situated in the personal narratives we collect and analyze? It is essential . . . to open up these interpretive issues for readers to see. (p. 61)

My intentions for this dissertation are to be as open and transparent as possible by clearly explicating my own thinking and subjectivity in the development of this research, its analysis, and presentation, so that the reader has as complete a picture of the study as possible.

However, the process of self-disclosure is far from simple, and the entire notion of reflexivity and what it can potentially offer as far as truth claims has been problematized as potentially being narcissistic and obscuring the ways in which power plays out in the research context (Pillow, 2003). Pillow cautions researchers that "self-reflexivity can perform a modernist seduction—promising release from your tension, voyeurism, ethnocentrism—a release from your discomfort with representation through a transcendent clarity" (p. 186). She offers the term *reflexivities of discomfort* to describe

> reflexivity that seeks to know while at the same time situates this knowing as tenuous [through a process of engaging] the limits of existing notions and understandings of what is acceptable research practice [and] forefronting the

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necessity of engaging in critical reflection about how it is we do the reflexive work of subjectivity and representation. (p. 188)

This positioning and line of thought resonated with my intention to be clear about my multifaceted relationships to the research sites and the participants while emphasizing a plurivocality (Hart, 2002) of the narratives, as well as avoiding a simplistic and surface treatment of the notion of self-reflexivity.

Triangulation was achieved in this study by working with the interview data produced by youth participants, adult mentors, and me in the case of the GGs; interview data from the students and the lead teacher in the case of the Seneca ECLC, as well as my participant observer field notes; and for EILI, my autoethnography and a visual analysis of the students' digital stories. By looking at these various perspectives from the three sites, a broader picture can be generated that would support validity, by seeing where there is correspondence or contention.

Member-checking was done by asking the participants to review the results chapter that pertained to their site and provide feedback as to how well my writing and representation resonated with their experience. Only when each participant's feedback had been duly taken into consideration and they had given their full approval to my representation of their interview was it considered ready for publication. In the case of ECLC the chapter was shared only with the lead teacher for the class, as it did not make sense to involve the students. In addition to increasing validity this process is vital for maintaining an ethical and participatory research relationship that accurately represents the narratives shared by participants in the study.

Thick description in the presentation and explanation of the data can "transport readers to the setting and give the discussion an element of shared experience" (Creswell,

2009, pp. 191-192). By engaging my existing skills and experiences of storytelling in concert with the rich narratives contained in the interviews and my own expositions, the reader of this story is afforded a window into the dynamics taking place at each of the research sites, as well as the meanings ascribed to the experiences of everyone involved. The narrative core of this study, by its very nature, demands a keen attention to detailed description that not only enhances its readability, but also attends to this aspect of validity.

Riessman (1993) highlights the key components of validity that can be applied to a narrative research project as persuasiveness, correspondence, coherence, and pragmatic use. Attending to the literary, rhetorical, and aesthetic dimensions of the dissertation enhances its persuasiveness. While not identical, it shares kinship with and contributes to a rich and thick description. Correspondence is addressed through dynamic feedback interactions with the study participants. It is, in other words, member-checking. Coherence is addressed by examining the global, local, and thematic levels of the narratives. By making as thick a description as possible that engages all three levels, it helps show that a given "interpretation is more than ad hoc" (Riessman, 1993, p. 67). Finally, the concept of pragmatic use refers to other researchers being able to base their work on the trustworthiness of a study by showing clearly how interpretations were constructed; being specific about the order of the attending, telling, transcribing, analyzing, and reading process; and being open to sharing raw data (i.e., full transcripts) with other researchers. I have sought, to the best of my ability in the course of presenting this study, to attend to all of these aspects of validity, especially given the nature of my close personal connection to all of the research sites.

While positivist and empirical models of research seek to provide insight into "Truth," narrative research does not make such bold claims; rather it gives voice to the meanings people ascribe to life experiences — their own personal truths. Hart (2002) contends that narrative methods "are always exploratory, conversational, tentative, and indeterminate" (p. 141) and that narrative researchers are "storytellers seeking meanings that may help us to cope with our circumstances" (p. 155) rather than scientists seeking out causality of behavior. Bell (2003) stresses the importance of matching one's methods to their ontological and epistemological orientations. She argues that "conventions and standards which underpin objectivist approaches are . . . ill-suited to narrative approaches to research" (p. 108). I knew there was a powerful story made up of many narratives of participants' experiences that I wanted to tell through this study. From the influence of grounded theory, I knew I had to be open to allowing it to emerge organically from the process of doing and reflecting upon the research.

With that being said, we shall learn together through these interwoven stories how the confluence of Indigenous ways of knowing, digital storytelling, and environmental education creates meaningful learning for those who have participated in this emerging pedagogical practice. In the following chapters the rich, substantive core of this study will unfold and generate insights into what was experienced by the participants in these programs, as well as myself. Now it is time for the stories to speak.

Chapter 4. Sustainable Storytellers Who Challenge the Status Quo: Green Guerrillas Youth Media Tech Collective Case Study

Introduction

This chapter presents the findings and excerpts from the interviews with the selected members of the Green Guerrillas Youth Media Tech Collective (GGs hereafter). This research site was particularly germane to this study, as it was the first place where I began to explore the confluence of Indigenous ways of knowing, in terms of philosophy and pedagogy, and digital storytelling for the purposes of environmental education. As the group had a 5-year history of continuous operation, providing on average 15-20 hours of programming per week for the youth participants, there was a tremendous depth of experiences that the interviewees could potentially draw from in their responses. In addition to a wide variety of local activities, the group travelled often to environmental fairs, businesses, and conferences that provided opportunities to meet people, build relationships, and see other real world expressions of sustainability and social justice. The program had been the subject of my masters thesis research and was a fundamental component of my development as an educator. It is presented as a polyvocal narrative, interweaving the voices of the interviewees and myself.

Research Questions

The questions addressed by this study are:

- What were the experiences and perspectives of participants in programs that utilized a combination of digital storytelling and Indigenous ways of knowing to foster environmental learning?

- What aspects of these programs did participants find engaging and meaningful?

- How did hands-on learning experiences and mentoring interact with the digital storytelling aspects of these programs?

- How do participants in these programs articulate their identities and sense of ethics in relation to the environment?

- How did participants experience a sense of empowerment?

The narrative excerpts were selected to shed light on the research questions from a holistic perspective that both provides thematic coherence and highlights the interconnections of the elements that emerged. The participants gave an abundance of rich and detailed responses during the interviews; these were carefully selected to represent both the breadth of ideas within them and the recurrent patterns. The themes that are presented here were selected based on both the initial guidance provided by the research questions as conceived for the research proposal, and what emerged most strongly during my review of the interview transcripts' codes.

I did all of the transcribing from the recordings so as to maintain accuracy. The transcripts were imported into ATLAS.ti and then were coded in a two-step process. During an initial review I approached the transcripts openly and coded sentences and passages with the most apparent and predominant themes that came to me using single words or short phrases, such as "mentoring" or "sense of responsibility." After all the transcripts had been coded once, I reviewed and coded them a second time to ensure that every interview had been considered against the full list of possible codes that had emerged from the first round, as well as to double-check my initial coding for consistency and accuracy.

I generated an output from ATLAS.ti of groupings of quotations organized by code which I then began to arrange and organize further based on their suitability for addressing the research questions and their compatibility in crafting a coherent narrative. In creating a dialogue between the interviewees and myself a re-storying took place that

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merged our voices in a way that they could complement one another to tell a rich and descriptive story about our collective experience. I sought to keep a balance of voices present whenever possible. My desire was to highlight the responses from the youth participants while still drawing material from the interview I gave as part of the research process, weaving it in and out as necessary to contextualize and frame the quotations, as well as provide my perspective as one of the group's lead educators.

Participants

The GGs youth members all came from low-income or working-class backgrounds. They were typically referred from a youth employment or advocacy organization and then were selected by unanimous consensus of all currently active youth and adult members after going through an intensive interview process. The adult mentors were college-educated people of color of various backgrounds with experience in either digital media production or activism or both. Those who agreed to participate in this study had a minimum of one year of participation in the program. The majority of them were involved for multiple years, and one youth was involved for all five years. The participants in this study from this research site are listed in Table 1.

Table 1. Participants Interviewed from Green Guerillas Youth Media Tech Collective

Name	Age at interview	Age when in GGs	Gender	Ethnicity
Patrick Booker	23	16-17	male	African-American
Che Broadnax*	37	29-31	male	African-American
Ian Dezelan	21	15-18	male	Mexican-American
Greg Jackson	23	16-17	male	African-American
Sequoya Lee	19	14-16	female	African-American
Gabriel (Gabe) Pontes	22	16-19	male	African-American
Kyrie Ransom**	27	20-21	female	Mohawk
Kierra Winston	22	14-19	female	African-American
Maggie Zhang	24	17-21	female	Chinese-American

* Adult mentor.
** Youth participant who returned as an adult mentor.

Background

In July and August 2006 the first cohort of Green Guerrillas Youth Media Tech Collective began to work together in an office rented by its parent nonprofit community organization — Southern Tier Advocacy and Mitigation Project (S.T.A.M.P) in Ithaca, NY. This 501(c)3 nonprofit organization had been founded the year before by Leslie Jones, who served as the Executive Director, and me. We both volunteered our time and energy toward acquiring the necessary resources to run GGs and served as the primary adult mentors.

> S.T.A.M.P held its pilot session . . . a six-week, hands-on job skills training program focusing on computer skills, media literacy, documentary video production, critical thinking, and transformative learning around broad issues of environmental sustainability and social justice. [Links were established with] Youth Employment Services of the Ithaca Youth Bureau and Tompkins

> Workforce New York–Job Link to secure a mechanism for the participants to have subsidized pay through their programs. For twenty hours per week, a group of four adult volunteers (including myself) trained four teenage participants. (Corwin, 2010, p. 42)

The goal of this summer session was for the youth participants to produce a documentary video comprised of compelling stories about social justice and sustainability topics. In conjunction with the other co-founder, I was responsible for developing the curriculum, as well as planning and coordinating many of the group's activities. I also provided the majority of the instruction in the technical skills of video production and co-facilitated the group discussions on sustainability and social justice issues raised in the documentaries and other research materials we would examine. The daily activities of the group involved studying a variety of environmental and social issues while learning media production and public speaking skills to communicate what they had learned to others. The learning process involved hands-on practice with cameras, reading of both print and online materials, watching videos, and extensive group discussions. There were numerous group field trips to sites where we would conduct interviews with a wide variety of local people involved in green building, renewable energy, and social justice.

After the first summer session in 2006, we decided to continue during the school year, offering programming three days a week after school and all day Saturday. The positive response from both the youth participants and the community to our video screenings motivated us to continue developing and expanding the program. Field trips to community gardens, organic farms, an apiary, parks, and nature preserves, as well as camping trips to off-grid rural homesteads, provided city-dwelling GGs an opportunity to develop a personal connection to the land while learning about strategies to conserve, preserve, and enhance the environment. The youth participants planned, researched and

discussed what they wanted to learn on the field trips and came prepared to interview experts or elders and record their experiences. Through watching documentaries and interviewing a variety of Indigenous people they learned about perspectives on care-taking of the earth for coming generations, such as the Haudenosaunee seventh generation philosophy, which emphasizes everyone's personal responsibility to their descendants and the imperative to not make decisions that will negatively affect them. They interviewed Mike DeMunn, a local Seneca forester, about forest ecology and sustainability, and Dan Hill, the Cayuga Nation representative for the Haudenosaunee Environmental Task Force, about the return of the Cayuga to their ancestral homeland. Chief Gary Harrison, the traditional leader of the Athabascan Nation Chickaloon Village in Alaska, who was visiting Cornell, came to the GGs office to give an interview about sustainability and environmental justice issues for his people. Throughout the course of the program's activities the youth participants interviewed and interacted with a diverse array of individuals and organizations including hip hop artists, community leaders, former political prisoners, filmmakers, environmentalists, green entrepreneurs, and community gardeners.

A prominent example of the group's pedagogy of hands-on learning and documenting of stories was our experience in renovating a small diesel bus and converting it to use waste cooking oil for fuel. After the interior was completely refurbished with nontoxic paints and new seats made from recycled fabric and soy-foam-based cushioning, the bus was converted to a mobile media center powered by a solar photovoltaic system we designed and built ourselves, with assistance from a local renewable energy contracting business we had a long-standing relationship with. We also

had decals with our various graphics and logos put on the bus and used it to transport group members to environmental and social justice–themed events and conferences. The on-board solar-powered system was used to run a projector and sound system to show our DVDs. The story of the work on the bus became the subject matter of the program's last full-length documentary, which provided detailed how-to instructions on both biodiesel production and waste vegetable oil fuel conversion.

Unlike most formal environmental education programs, GGs took an explicit stance regarding community engagement and advocacy/activism. Environmental racism, global political and economic issues, and the underlying ideologies were researched and then critically analyzed in group discussions. In addition to viewing documentaries on problems of pollution, loss of safe, productive land and food supplies, the exploitation of labor and natural resources in Indigenous and poor communities, and the social movements challenging these issues, the teenage participants attended conferences on sustainability and social justice. One such was the Dream Reborn conference in Memphis, Tennessee on the 40th anniversary of Dr. Martin Luther King's death (2008). The GGs listened to speakers like Afeni Shakur (Tupac Shakur's mother and former political prisoner from the Black Panthers), who runs an organic farm and a community empowerment organization, and Winona La Duke (White Earth Anishinabe and former Green Party vice-presidential candidate), who advocates for renewable energy and sustainable agricultural development for Native communities while drawing attention to environmental justice issues facing Indigenous peoples. The youth participants demonstrated their proficiency in the skills of community organizing and advocacy when they actively challenged racial discrimination in the Ithaca City School District and

hydraulic fracking by speaking out at both school board and New York State Department of Environmental Conservation hearings. They did extensive community outreach on these issues while continuing to create media to educate and persuade for change.

Research Findings

Green Guerrillas Pedagogy

Igniting the Spark

The educational and operational structure of the group was designed to facilitate a passionate engagement with learning that would be fulfilling and empowering. This was especially important because most of the youth participants were at risk for criminalization and a poor educational outcome. While at any given time some of the youth were doing well in school and others not so well, they frequently commented that they found the group's learning environment to be more supportive and enjoyable than their formal education. The topics we would examine were typically ones that they were not learning about in school but were relevant to their lives as young people of color, and therefore attracted their interest. However, what resonated most strongly with them was being part of a learning community where everyone's opinions and thoughts were valued and being able to engage in hands-on and self-directed learning. In the interviews the crucial components of a successfully engaging GG pedagogy that were mentioned were the exploration of critical consciousness in a safe social learning environment, having a concrete sense of accomplishment, spontaneity, flexibility, and the dedication of the adult mentors.

The participants spoke extensively in their interviews about their experiences of the learning environment in the program. Youth and adult GGs reflected favorably on

their participation in the group, highlighting their appreciation for being able to experience a new model of informal education.

> Patrick: The overall learning environment in GGs was great! Nothing was ever forced upon us. They taught us good information in ways that made us want to learn more about it.

On the surface, this is a simple statement of appreciation; however, knowing the background of the individual places it in the context of the group's intentions to inspire marginalized adolescents. Patrick struggled with school while he was in the program. He was highly intelligent and articulate but had difficulty staying engaged at Ithaca High School. During his time as a member of the group, we helped him transfer to the Lehman Alternative Community School, another public school in Ithaca with a more flexible curriculum. The narrative arc in his full interview highlights how his experience in GGs allowed him to connect environmental and social issues to his experience as an African-American hip hop artist. An important aspect for us, as the coordinators of the program, was to honor the interests and knowledge of the youth involved. We knew that some of the topics about sustainability and the environment were going to be new to them, so we strived to present them in ways that they would find engaging and would spark their interest.

> Kyrie: And so even seeing how the program was structured and that you could create a supportive learning environment and really motivate youth to get involved in something that they had no idea even existed in the world, and seeing that kind of foundation of learning, it's something that I worked to try to emulate once I got home.

Kyrie was the oldest youth participant during our first summer session in 2006 and was the only one who wasn't from the Ithaca area as she was born and raised on the Akwesasne Mohawk Territory. She was a student at Cornell with a deep interest in

filmmaking and the environment. In the summer of 2007 she returned to the program as a

mentor, helping the younger students with camera work and editing skills. Throughout

her interview she related how, when she returned to her home community and became

involved in youth development work, she applied the lessons she had learned in GGs. For

some of the participants their experience with the program exposed them to new concepts.

> Gabe: It was different [laughs]. It was my first job basically. It was weird cause it
> was a lot of learning and it was learning a bunch of stuff I wasn't familiar with,
> like sustainability. That was one of the first questions y'all asked me was — do
> you know what sustainability is? And I was like, nooo [laughs]. From there it just
> had a lot to do with consciousness and being aware of what's going on. That
> wasn't something that was ever really brought to my forefront of having to know.

Gabe expressed a sentiment that was shared by many who were in the program. They did

not expect a media production job-training program to have such an intensive educational

focus. Some of them, like Gabe, had an interest in digital media and were referred by

another local youth agency. Throughout his interview, Gabe related various short stories

about instances where he learned about subjects that he had never encountered before.

Our intention in creating the program was for the youth to be exposed to new ideas and

the tools for thinking critically about the world around them, as well as their own lives.

Political Education

One of the key pedagogical practices of the group was what we called "PE,"

which was short for political education, a concept we had borrowed from our experiences

in activist groups. At least once a week, we would watch a documentary or narrative film

about any number of subjects. Race and racism, environmental justice, political prisoners,

the history of social movements such as the Black Panthers and the American Indian

Movement, and cultural expression such as music and dance were some of the primary

subjects we would regularly engage with. After viewing a movie we would have group

discussions about it. As media makers we would look at the structure and aesthetics of a given production to study the art of compelling storytelling; however, we were often even more focused on the content. By learning to think critically about the information in a movie through having dialogue with others who shared a variety of opinions and viewpoints on a given subject, it allowed all of us to expand our knowledge of the world around us and exercise our interpersonal communications skills.

> Ian: I think because we had the big round table for discussions it was human-to-human learning too. Not only were you learning about something new but you also learned about how other people saw the subject or this problem. So you got that perspective too that you wouldn't have in class cause you're just learning it from a teacher, a book, with a very certain angle to it or a bias that just presents it in one simple way. Usually things aren't that simple. . . . It was good to also develop those language skills, too, and discussion skills in order to get your ideas across in a way that's helpful to the person. . . . We were all very much learning together . . . like a shared development.

Ian came to the group with a deep interest in filmmaking, but was fairly shy at first. Like most of the teens in the program, he adapted well to the environment and became a vocal participant in group discussions. His narrative that he shared about his experience in the program mentioned aspects of social learning several times. Many of the teens expressed appreciation for not only being exposed to unfamiliar topics but also getting to experience a pedagogical practice that differed from what they were accustomed to in their formal education.

> Greg: They don't teach you that stuff in school at all. A lot about the Black Panthers, I had no idea really what they did, who they really were, besides what people said that didn't really know either obviously. . . . I think you asked me if I knew what the Black Panthers was and I told you what my teacher told me, that it was the reverse of the KKK. Then we learned so much about them, that's not what that was about. Stuff like that. Eye-opening stuff.

As one of the few African-American students at rural Newfield High School, Greg had been exposed to a good deal of racism. He came into the program a very shy and reserved person. When he graduated from GGs he was still generally quiet in his demeanor, yet had a confidence in his thoughts and opinions that he didn't have before. The narrative he related in his interview spoke to learning about racism, challenging it, and feeling empowered. Other participants agreed that the political education sessions were an important part of their experience in the program.

Maggie was also an extremely shy person when she joined the program. Through the course of her four years of participation she became extremely outspoken about issues of injustice.

> Maggie: Tough. Is that the word for it? Eye-opening. Safe. That's a definite. But at the same time though, the environment we were in was safe and eye-opening, but every Thursday we would watch documentaries and it would make me, not so much afraid, but hate the outside world. It was really depressing. No doubt about it, I learned a lot. But wow, I still try my best to not drink anything with high fructose corn syrup in it cause King Corn[24] was super scary. All the other documentaries. . . . I know it's happening, I know it's still happening, all this crazy stuff around the world, but I don't like to think about it. Overall it was a good environment: safe, learned a lot of self-awareness and awareness of what was around me, even if it scared me.

Many of the films we watched not only treated new subjects to the teens, but also dealt with intense and troubling subjects such as environmental devastation, genocide, and all types of injustice. The narrative that emerged from Maggie's interview focused on the difficulty of learning about problems in the world and figuring out how to address them in her personal life. The discussions were important so that the group could "debrief" and talk about their feelings. As one of the coordinators of the program it was essential to me

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[24] A documentary we watched about modern corn agriculture that showed the chemical process of making high-fructose corn syrup.

for the youth to feel that they were in a safe space where they could speak openly. One of our rules of conduct was that nothing we discussed was to be shared outside of our group. The participants knew that anything going on in their lives, whether at home, school, or among their circle of friends, they could talk about and find support.

The PE sessions allowed us to explore and discuss the issues that underlie the status quo of American society, and for that matter the Western world. Racism, sexism, colonialism, and capitalism undergird the very fabric of those societies. As a group we intensively examined things that are taken for granted or that are so ingrained in society and life that they are hard to see. We gave names to phenomena that the youth GGs had seen and experienced in life, but in many cases never had the chance to discuss in depth with their family or friends, or in school.

Hands-On Learning

As educators we drew upon our experiences in social movements and Indigenous communities to design a pedagogy that would allow for experiential learning and the development of holistic, synthetic thinking that could make connections between a wide variety of subjects. We wanted them to understand the relationships between social, political, economic, and environmental issues and their own lived experiences, while gaining practical skills through hands-on experiences.

> Che: I think it was really good to have both those sides, to have the documentation and the actual doing of the work. . . . But in a more deeper way there's something about getting your hands on these processes, and these processes are basically environmentally more sound things. Much like we were talking about rooting some of the curriculum in cultural practices makes it more real, well getting your hands on a bus and converting it from running on diesel to running on veggie diesel — that makes that really real.

Che was an adult volunteer who worked with us the first three years of the program. He brought with him a background as a filmmaker, a hip hop artist, as someone who had experienced alternative forms of education in high school and college, and had spent most of his childhood with his father being incarcerated. He had many skills and experiences that were valuable to the development of GGs, and he believed in the group's mission to offer a critical and experiential learning experience for the youth participants that they could relate to their own lives as youth of color growing up in Ithaca.

> Kierra: It was open. What makes it unique is . . . it wasn't just you guys teaching, it's not like a classroom, it was hands-on so we would do our own research. Then when we would do our own research we could interpret it however we felt. And then we would have discussions about different things, and on top of that we would bring in our own personal experiences. So for me it was also critical. It wasn't just learning about one specific topic. I felt like I had gained a lot of ways to analyze different things and to use critical thinking to analyze different situations and problems.

Several profound reflections in the interviews came from Kierra, which was not surprising, given that she had the longest tenure in the group. She joined GGs shortly after the first summer session had ended and remained in the program until it ended five years later. The development of critical social and environmental consciousness was a key focus of the group, and throughout her interview she emphasized the empowerment she felt from her learning experiences in it. Her narrative of her experiences in the program speaks to learning as a liberating process.

As the architects of the program, Leslie and I felt that the youth participants would find resonance with the topics of the digital stories we worked on if they had the opportunity to do their own research and gain the skills of critical thinking and analysis through discussion and debate. Experiential learning took place both through the topics

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we would investigate and then participate in (e.g. gardening and biofuel production), and

through the process of becoming digital storytellers.

> Gabe: I would say it was very hands on. That's what really helped me to grasp everything. You know we would research something and then we would go apply it right away. Like I was saying earlier, with the cameras we would learn about the white balance, the shutter speed, the aperture and then we would go into the field. We would go to the wildflower preserve. That's where I would mess around — set the white balance, change the shutter speed, things like that. Also it was very . . . we wouldn't hoard the information. I would learn a lot. Like the movies we would watch, after that we would have the discussion and then I would go to my friends and I would talk to them about it. They would make fun of me [laughs]. Stuff like that, it helped to talk to them about it, cause we would go out and do the public speaking part of Green Guerrillas. That really made me nervous, but that helped me with talking to people about what I do, what I like, what I'm interested in. The learning environment basically was helpful in making the information shareable. It solidified it. Provided a good foundation.

In this passage, Gabe speaks to two key aspects of the group's learning environment.

Digital storytelling was taught through extensive hands-on learning opportunities, which

he notes as being a good way for him to learn. His most memorable instance of this was a

shoot in a city park that is also a wildflower preserve where he got to practice his camera

skills. Another important part of the group's activities involved community engagement

at events held in the community and at Cornell University and Ithaca College. We would

set up a table with informational display boards we had created about our program and

displaying our DVDs for sale. The youth participants were expected to interact with the

public and tell them about our work. They would also participate in panel discussions and

presentations where they had to speak in front of large audiences. Public speaking is

intimidating for most people, yet through practice together in our office and in

community event settings, all of the GGs learned how to speak clearly and coherently

about a variety of topics. Gabe states that he gained confidence in speaking to people not

only about the work of the group, but also about himself. He finds meaning in his ability

to share information with others.

Customized Curriculum

The youth GGs developed their self-confidence and their ability to articulate

themselves through the intensive intellectual work we did together in our media center

office. As a group we conducted research and discussions collectively in an atmosphere

of mutual respect and support, encouraging substantive inquiry and introspection.

> Kyrie: I liked that we as participants did so much research first. We had that
> guided assistance to go through and do our research first so we were prepared
> once we got out into the field and worked on these different areas. So whether it
> was solar panels or a different area, we had that knowledge base that we found out
> for ourselves. So it made it more important, for me at least, once we got there that
> — hey, I just read about this! And now here it is in practice. So for me that was
> very beneficial.

Whenever the group was going to be recording an interview, they would do extensive

research beforehand on the person and subject to be covered so that they could ask

informed questions. Questioning was a central component of the learning process,

whether in interviews, during political education sessions, or in general discussions about

current and local affairs, where the youth were encouraged to question the status quo of

mainstream ideas and practices.

> Ian: It was very non-judgmental. A lot of times when you're in the classroom or
> in school you might feel pressured to not ask questions. You might feel the
> pressure to act like you already know something because you don't want to be
> embarrassed in class. You don't want people to think you're dumb or whatever,
> but at the Green Guerrillas it was more of a very accepting learning experience.
> Some of us were more knowledgeable about some things, other people were more
> knowledgeable about others, but we all could explain it to each other at a good
> pace. . . . I noticed a lot of times we were like, wait a minute let's look this up and
> we would stop a movie or we'd stop the conversation and quickly look it up and it
> would add a new layer to it, and that just doesn't happen in a classroom usually.
> There's a set curriculum, you know, set learning for the day and it doesn't allow
> for a lot of leeway and other subjects in the lesson that might be really pertinent to

some kids in class. But at the Green Guerrillas it was kinda like we were guiding it in a way. It wasn't just like, this is what we're gonna do today and this is how we're gonna do it. It was more like this is what we're gonna talk about today, let's see what we can think about.

Ian's interview illustrates that it was meaningful for him to feel part of a supportive learning community. He contrasts his experiences in the program to the formal education he has been exposed to. In addition to feeling free from being judged, he expresses the value of good communication within the group as they supported each other's learning. He also stresses the value of experiencing a flexible curriculum that encourages self-directed investigation. Having the flexibility always to do more research on a related subtopic was an important part of our design of the learning environment so that the participants could develop an awareness of the interconnectivity of diverse issues. They were always encouraged to investigate definitions and background information for any unfamiliar words and topics encountered.

> Che: There was a lot of embracing spontaneity in the program. And a willingness to go onto tangents cause I think ultimately a lot of what we're talking about is interconnectedness between this field and that field and the environment. What people are doing here and how that politically can affect what's going on there. The overall scope of what we were learning about helped us to navigate more of a web or lateral based thing, a network of ideas versus having to have a linear path. The most linear stuff is, we've got these particular field trips planned so we have to do those and at the end of the session, if we had been doing a lot of shooting, there would be a project. But other than that, there was this possibility to go off in different directions. . . . It was a good balance of open and free form with a game plan.

Che emphasizes that there was both structure and openness to new investigations and activities in the group. As someone with extensive experiences in alternative education as a student himself, the approach to learning in GGs made sense to him. Issues of complex connectivity could be explored and not be limited by a purely mechanistic and linear model of learning. When the program was designed there were goals set for producing

videos regularly, while also leaving room for self-directed inquiries based on the interests

of the participants.

During the interviews, several of the youth alumni expressed that the learning

environment fostered a high level of engagement while building their capacities to think

critically with a holistic perspective. This was especially apparent when there were local

issues that affected or had the potential to affect their lives.

> Sequoya: I think it was open in the way that there was many ways that we learned.
> It was serious. . . . I think that's another step of really learning. When you really
> learn something you can do that shit in the moment [snaps her fingers]. The fact
> that we ended up researching a lot of stuff ourselves and building our own
> research questions a lot of times, our own topics, we really wanted to learn the
> topic versus we have to learn this about fracking or whatever. I think a lot of
> times when we learn in more academic settings we're trying to get a certain thing
> versus the overall and being invested in and learning about it and how it connects
> to everything else.

Sequoya came into the program at the age of fourteen. Typically we only allowed

students fifteen and older to join, as it was our experience that teens that age and older

would have the maturity to be able to handle the demands of the program. However, she

had a strong desire to work with the group and seemed to be mature enough, so she was

given an interview and the collective decided to accept her. As the participants developed

their skills and sense of agency they took it upon themselves to take ownership of the

group's agenda and address issues that were important to them.

> Kierra: With Green Guerrillas it was different. Once we found out about fracking
> we were like oh shit let's research fracking. We had this plan, but let's research
> fracking today. And then there's gonna be this meeting at the State Theater where
> the DEC is gonna be there and you have two minutes to talk. Ok how do we come
> up with something creative? We had just learned about it but then we're using our
> critical thinking skills, the media skills to figure out a way to say what we want to

say. Or even with the walkout,[25] some stuff just happened. I don't think you have that . . . some professors I guess could leave it open for you to figure it out, but that's not often in school. So it's just a different type of learning environment. . . . They should use Green Guerrillas as the model for the new curriculum. You know how they're trying to do all this educational reform shit? Come watch Green Guerrillas and see how it unfolds and then you can figure it out. . . . Green Guerrillas put me five years ahead. I could've gotten a degree in sociology from Green Guerrillas.

After the program ended, Kierra went on to Monroe County Community College and transferred to Ithaca College, where she graduated with a bachelors degree in sociology while this dissertation was being written. Both she and Sequoya spoke extensively in their interviews about how their experience in GGs put them several steps ahead of their college classmates in terms of critical thinking abilities and awareness of social, political, environmental, and economic issues. Kierra's quote highlights the importance she places on having learning experiences that led to the group taking action on issues that mattered to them. Like Ian, she contrasts her experience in the program with that of her formal education.

The learning environment in the program evolved organically during its five-year existence and was informed primarily by the adult mentors' experiences in various informal social-learning environments such as activist organizations and culturally focused activities in Indigenous and African diasporic communities. We also drew upon our experiences with renewable energy, green building, and organic gardening as we crafted the group's focus on sustainability and social justice. At the time the program was founded neither of us had been exposed to environmental education literature. However, I had experiences as a participant in outdoor education and outdoor activities that had

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[25] On October 10, 2007 members of GGs organized a student walkout from Ithaca High School to protest racial discrimination. For more details see Corwin (2010).

shown me the importance of direct contact with nature. The four years I had spent

working for the film and video production program at Cornell gave me the background to

effectively teach media production. Leslie's strengths were in community organizing and

youth empowerment. Together we combined these influences to craft the group's

pedagogy.

Engaging with Food as Environmental Education

One topic that I didn't anticipate being so prevalent in the interviews was food. It

became apparent that it was a major point of engagement with the program that

participants related to their personal empowerment and well-being, environmental ethics,

social justice, and aesthetics. Almost everyone mentioned it, with several of them going

into extensive detail about either the snacks in the program or the food that we would

experience on field trips. Many of them spoke fondly of the new types of cuisine we

would try in our travels.

> Ian: Well I remember we used to eat at a lot of different places we would go to.
> And I always thought that would be really interesting that we would try different
> foods that I would never ever try in a million years. Not to say I would NEVER
> try it, but it wouldn't be my first choice if I hadn't had it before, like Ethiopian
> food.

We made it a point on our trips to sample a wide variety of ethnic foods. Several of the

youth participants commented about how they had especially good memories of our

snack foods and drinks. At our office we made sure to stock items that were healthier and

organic alternatives to junk food. We wanted them to experience that alternatives to what

they were used to could be just as enjoyable and aesthetically pleasing to the palate. This

was an integral part of the program's approach to sustainability.

> Che: Thinking about, ok, the food we eat, you don't just eat organic food because
> it's good, you eat it because there's this long chain of events that occur for the

food to get to you. So just in terms of the food, we always had snacks in the room and the snacks were always organic, if possible local or otherwise sustainable or just [i.e., fairly traded]. That's what we tried to do for that, because consumption of food is one of the most basic interactions you can have with the environment.

Che alludes to the environmental and social justice ethics that undergirded the

programmatic decision to offer organic foods regularly to the participants.

For some GGs, the information they learned about food carried with them into

their present lifestyle choices.

Gabe: And the more and more I became aware of what was going on around me the farther and farther I got away from my destructive habits like littering and eating McDonalds. . . . That was a big thing for me to learn. It actually affects me today cause I'm a vegetarian now. That was a big part of it. Thinking about what I'm putting in my body.

Hands-on experiences with community gardening and field trips to farms provided vivid

learning experiences that allowed participants to think holistically about broader

environmental and social issues connected to food.

Kierra: Well what pops up in my head right now, when we helped start the community garden over at the church by Northside, by the grocery store. Remember when we were eating flowers? [laughs] Is it me or did Green Guerrillas do a lot of shit before it became popular? Cause we were learning about composting back then. Now everyone is on composting. . . . And then also a few summers later when we went and picked strawberries. Again I just have to stress the fact — we were empowered through Green Guerrillas, we were empowered by seeing the product. So to actually go out there to a farm, was that the first fruit farm I ever went to? Possibly. Well to go out to farm, pick strawberries, go to a local creamery, help make the ice cream and then have the ice cream at the Block Party, it just connected the dots all the way around. . . . We helped organize the Block Party so that was a cool outside experience. We were together, we were working with the community . . . we made this product and this product went to something we had organized and everything just was connected.

Cause people don't realize . . . they just think food is food, but there's all these different layers of how food travels to you. For example when we went to Detroit we saw how there were no grocery stores. But even if there were grocery stores . . . having grocery stores is better, but even if there were grocery stores what would they be filled with? And then the waste aspect, people don't think about these things. Especially if there's other conflicts that are involved with the

system. If you live in a low-income neighborhood because of housing segregation for example, you may only have access to the corner store, the bodega, where you're only getting food that's like 99 cents and yeah it's cheap and you can't get a job for some reason — you've been locked up before because of the prison system and you can't find a job or you're making minimum wage. So you don't have enough money to go buy organic food, which is highly priced because of this whole political system, so everything's connected.

Kierra offers a rich response about food in her interview. She relates a narrative of her own hands-on local experiences of learning how to garden and compost as well as participating in a farm-to-table activity to food justice issues she learned about in our two group trips to Detroit. Her articulation of the connections between food deserts, the prison industrial complex, and other socio-economic injustices suggests that the GGs learned to situate their experiences of local food production within larger political, economic, and social issues.

The teachings about food within the program were such an integral part of our everyday life that I had taken them for granted more than the participants had. From the enthusiasm of their responses in regard to eating healthy and trying new cuisine, to their appreciation for having first-hand experiences with agriculture and developing the background to reflect critically on issues such as food access, their interviews spoke to a well-developed conscientiousness regarding food production, consumption, and the broad array of related social and environmental issues.

Interpersonal Connections

One of the reasons the long-term participants in the program felt such a strong sense of identification with it was due to the personal bonds they formed with each other. Their interviews revealed that to them it wasn't just a job-training program or a community organization they were a part of, but something that held deep personal

significance and supported them in their lives. Patrick felt that "the atmosphere was always good. The GGs was more like a family than a job. The best part was that I was with people I consider my family." Gabe had similar observations and highlighted the importance of being able to be authentic in that space. "There was no need to be not myself. I didn't have to act like I was at a job cause it was just natural." This group environment fostered a sense of camaraderie and enjoyment among its members. Sequoya remembered, "coming into GGs and a month after it being like, not feeling like necessarily that I fit in all that well, but being that I love that I laugh a lot. I love that I was smiling and being around people that are cool." For Ian that sense of enjoyment in the program helped him to cope with other aspects of his life:

> Just hanging out in the office is what I would look back on real fondly. . . . It wasn't like a hierarchy or anything. I think that we were damn hilarious. There was a lot of funny moments. That's what I would remember is laughing a lot. It was a good "de-stresser." Cause usually you'd be there after school. And you'd be like, shit, I have so many things to do later on, but then you'd just end up feeling good afterward.

Kierra shared that the group felt like a support system for her when dealing with day-to-day injustices she experienced or heard about in the news:

> We were like a family. We were a group but we just connected. . . . Maybe it had to do with the level of thinking, which is very important. We were all coming from the same place. . . . The level of consciousness bonded us I think. . . . I could be, like, that person got shot by the police. And then you guys would say, that's fucked up — not like, oh what did he do? You know? So I think that's what really made it home for me. This was a place I could come and vent to you guys and tell you some stupid shit that my teacher said and I felt supported. I had a support group outside of the nonsense.

Kierra suggests that there was a special sense of solidarity because of the shared development of critical consciousness. By having the tools to discuss and analyze oppression, plus a familial sense of connection, the GGs were able to support one another

as they encountered injustice or other challenges in their day to day lives outside of the program.

Che shared an observation that associated the interpersonal bonds created within the group with the dynamics of social change and relationships with the natural world:

> That to me always feels like the most important thing in any kind of educational context. Some people will really take to heart the content and some people will follow the field that they're learning, but what's really important is that people make a human connection with each other, because I think that kind of empathy in community is at the heart of any kind of change. . . . I think that connection as an overall goal brings it back to the environment and the interconnectedness of everything.

The sense of familial connection, enjoyment, support, and solidarity all contributed to the group gatherings creating a space where everyone felt comfortable being themselves in a shared learning community. It is for this reason, in particular, that the participants were so engaged with the educational activities and mission of the group.

A significant bonding moment for the youth came when we took our first trip to Detroit in 2010 to attend the Allied Media Conference and the US Social Forum. In between those two events we had a small window of time to enjoy some recreation. Every June 21 the cities of Detroit and Windsor, ON (which is across the river) have a joint fireworks display. Leslie and I had left the group together to enjoy the fireworks on their own and so that we could go eat dinner. As they walked backed to the hotel from the riverfront afterward, they encountered a scene of urban chaos.

Sequoya: We got shot at!

Maggie: Right!

Sequoya: That was the first trip! With the sparks flying!

Ian: Thank god for Sequoya…

Kierra: Sequoya was like "let's go this way". She was like "let's walk this way."

Sequoya: But what's crazy is — remember we went down the alleyway and ended up seeing that car though?

Kierra: And I saw the glass windows broke.

Maggie: And we went back around and it went [makes exploding sound] and just collapsed.

Sequoya: Memories!

Ian: You were scared. "They're gonna find us. They're gonna kill us. We're all witnesses."

Sequoya: I just felt I was gonna see a dead body. Thankfully we didn't see any dead bodies.

Kierra: But we were on the scene. They were doing U-turns.

Ian: Gabe kept real cool though. He was like "no, no, we gotta go" [everyone laughs].

Kierra: And then it was crazy cause we didn't know if it was fireworks or not.

Sequoya: No, I saw the gun and sparks.

Maggie: I didn't see it. But it sounded like fireworks.

Kierra: They had just had fireworks.

Ian: I remember I could see the guy shooting.

Sequoya: The gun, the sparks. He went low, too, like he was all gangster and shit.

Ian: He was doing the "Boyz In The Hood" [everyone laughs]. I heard that makes your gun wildly inaccurate too. It just adds to the point that if we took the normal way back like we were going to we would've been right in the crossfire of that idiot. I remember the cop afterward who was like the most uncaring cop. I remember there was a cop afterward and he didn't even talk to us. He was just walking around like, duh. But the fireworks were great that day.

What could potentially have been a disastrous experience ended up being a moment they vividly recalled as bringing them closer together. This group narrative highlights how they felt that different decisions that members of the group made had kept them out of

harm's way. The camaraderie they already felt working and growing together as a group was strengthened by this shared experience of going to a city known for its blight and violence and surviving a close encounter with a shooting. While this is an intense and atypical example, there were daily opportunities for the GGs to bond with one another in the course of a shared learning experience.

Our intention for the GGs when it was conceived was to create a flexible and egalitarian learning dynamic where critical social and environmental consciousness could be explored creatively in a safe and supportive space. The participants were able to experience a synthesis of Indigenous and activist pedagogical influences, which they related as more appealing than their formal education. These opportunities for hands-on experience, social learning, intergenerational exchange, and mentoring provided education about a wide variety of subjects that the participants articulated was both engaging and particularly meaningful to their experiences as youth of color. They felt invested in the topics we worked on, which led them to take ownership of their learning process. Food played a significant role as an aesthetic point of engagement with issues of environmental, social, and individual well-being. The development of close interpersonal relationships was a significant factor in the level of engagement with the program. While the group did start with a certain set of guiding intentions from its founders, because of the bonding process we all went through and the close relationships that were developed, everyone in this study felt they could contribute to the shaping of the group's objectives and identity. Key parts of that identity that seem to have stayed with participants are that they can think critically and holistically, they are important, their voice is important, and they feel empowered to stand up for themselves and what they feel is right. We never

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wanted or expected the youth participants in GGs to be carbon copies of their adult

mentors; fundamentally we wanted them to feel and experience their own value and

power. It was certainly our hope that after leaving the program they would carry forward

the values and ideals that GGs stood for — a more sustainable society that is both

environmentally responsible and socially just. Many of them spoke in their interviews

about the experiences and lessons they learned in the program helping them in their

personal lives, as well as their academic and community work after they had left it.

Digital Storytelling and Environmental Education

Engaged Learning

When the GGs group was being developed conceptually, Leslie and I decided, as

the co-founders and coordinators, for a number of reasons to make digital storytelling a

core activity. We felt that in this learning environment it would be engaging for young

people, as well as being an effective means of communicating ideas to the public, which

aligned with our advocacy objectives for the group. In this electronic-mediacentric age,

we posited that it would be a familiar tool to the youth that could facilitate their exposure

to a variety of educational topics, while providing a platform for them to educate others.

We presumed that topics such as solar energy and biofuels might not be interesting at

first to the demographic of teens we would be working with; therefore, digital storytelling

could serve as a bridge to environmental education. Our operating assumption was that if

the youth participants found the activity of media production to be engaging, they would

eventually take an interest in topics related to sustainability.

> Che: It was an access point that was not weird; it was not radical to them. It was
> something that they all thought about and thought was kind of cool. Media was
> still, even if it's everywhere, it's still kind of cool. Just that alone made it a really
> great choice for some of the other stuff we were doing.

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As Che implies, digital storytelling's appeal also made it a conduit to other hands-on environmentally themed activities that were a part of the group's mission, such as field trips to farms and places that utilized renewable energy and green building technologies, as well as outdoor activities designed to foster ecological literacy. Since the youth had a proclivity toward engaging with digital media, it helped foster and sustain interest in other topics we were investigating as a group, which included social matters such as equity in schools, the prison-industrial complex, police brutality, and a variety of other human rights topics. We surmised that they would find empowerment through being able to create compelling stories about these issues that directly impact their lives.

All of the youth alumni who were interviewed expressed that learning to work with digital media provided a stimulating experience that engaged their creativity while being an avenue for them to feeling empowered. Their responses highlight that digital storytelling was an activity that fostered learning and a sense of accomplishment.

> Greg: I learned a lot through editing and filming and photography. I didn't know that, but I had a lot of fun doing that. I learned that I could actually see myself doing that. . . . Interviewing people — I think I can come up with some pretty good interview questions.

Developing the ability to conduct an interview is a foundational component of documentary video work. It is also an important aspect of an inquiry-based learning process. When Greg joined the program his only media experience was with a family camcorder. His response shows that he associates learning with his media production experiences in the group. Some of the youth came into the program with a background in creating digital media for their personal enjoyment, which facilitated their interest in the program's activities.

Maggie: I loved working with graphic design. Loved it. So at the time that's all I wanted to do. Just get on the computer and do that stuff. I was very excited to learn how to use the video editing programs.

At the time Maggie joined the program she was already adept at graphic design and working with computers. In addition to being shy, she was the only Asian-American in the group, which added another layer of social adjustment she had to navigate. However, her enthusiasm about learning how to work with digital video eased her transition into eventually becoming a vocal and engaged member of the group. Kyrie came into the first cohort of the group in the summer of 2006 with a set of videography experiences from a class she took in high school on Native media. Her deep interest in this area helped her connect with the program.

Kyrie: So for me, I love that field, I love the whole media aspect to it. To bring that into a program like Green Guerrillas, it just enhanced everything and it kept things interesting cause there was a purpose. . . . So to have this media there, it's a catalyst to do that, to express ourselves and to go through and tell whatever story we have that day.

Kyrie highlights that the media production component of the program stimulated her interests. She also notes that it allowed for the GGs to find their own voices through the creative process of crafting a story using digital media. For her, digital media is a "catalyst" for self-expression and engagement with the subject content of the stories that they worked on.

In addition to engaging their interests, the digital storytelling process fostered learning about the topics that were the focus of the group's video projects. Gabe came into the program through a referral from the Learning Web program, a local youth development agency. He had an interest in computers and technology but no significant media experience beyond that of an average teenager.

Gabe: It's like a whole different atmosphere when there's a camera involved. Cause you know people are gonna see it and they're gonna see you and know that . . . it's almost like being there. It's as close as you get to being there with video. It made it interesting and I learned a lot.

Gabe articulates a positive association with using digital video for its ability to convey a sense of closeness to a subject, while stimulating his interest and facilitating a significant amount of learning. While they expressed both pleasure and satisfaction from participating in digital storytelling activities, several of the GGs also associated it with a significant amount of learning in their interviews. Digital storytelling became more to them than just an interesting and enjoyable activity; it was a vehicle for learning about a wide variety of subjects pertaining to sustainability and social justice. As adult mentors of the group, we observed that the process of gathering material for the video projects fostered a dynamic learning process. By its very nature, conducting interviews with knowledge holders encouraged a deep and sustained engagement with the subject matter of a given video project.

Che: If you take a teenager somewhere and then have someone lecture them about something, that's boring to them. But if you take a teenager somewhere and have them actively interview that person, they might not care about the topic, but they're engaged in the information getting process. When they have to think about what questions to ask and the information they're getting, how to change their questions based on that, they engage in active knowledge building cause they have to synthesize that information. In terms of how the storytelling played into the environmental stuff and the cultural stuff I think they were . . . building knowledge . . . through the mechanism of it being an interview and it being a documentary.

Both Che and I had backgrounds in documentary filmmaking when the program started and knew that working with that format is an educational process for the media producers themselves, not just the audience viewing a completed work. The youth participants expressed that the participatory nature of digital storytelling facilitated the

comprehension of subject material, as it was a process that made learning interesting and

engaging to them.

> Maggie: Because we made our own documentaries, that definitely helped, cause without research we couldn't have made them. Anything hands-on, I need visuals and I need to see and learn. Having to do research, all the interviews, and then having to put things together, having to re-watch everything over again, definitely that helped. It was a good interactive experience.

One of the educational benefits of working with digital media is that throughout the

process there is repeated exposure to information. Research is done as a part of pre-

production. Interviews and other footage are seen and heard multiple times during the

course of reviewing and selecting material for editing, which reinforces retention of the

content. The program aimed to teach the youth members all the skills they needed to be

competent media producers so that they would be confident during each step of the

process.

> Patrick: The way we were being taught was in a fun, cool sort of way. They didn't just give us textbooks and papers to read and study. Actually they never did that. Instead they showed us how to operate equipment and use different software to edit material. When we were out filming they let us ride in the front seat and gave advice and pointers when we needed them. That alone, being that we were out in the field, made us want to participate even more. It was work but it was fun work.

As noted in Chapter 2, some approaches to Indigenous pedagogy emphasize educational

enjoyment and hands-on learning. Digital storytelling in GGs offered an opportunity for

active learning that was both inquiry and experiential based, while also being enjoyable

for the participants. This multimedia learning process reinforced their understanding of

the information they were being exposed to, as well as keeping them engaged and

enthusiastic about the topics we were investigating collectively. Patrick enthusiastically

highlights that he and the other participants were encouraged to take on the lead roles

during video production and "ride in the front seat," as he puts it, which speaks to the sense of empowerment he experienced.

Several of the other youth participants also express in their interviews that they gained a great deal of satisfaction in realizing the power of the stories they were creating to reach and educate others because of the accessibility of the media format they were working in. This was an important component of the empowerment process in the group whereby they were not only raising their own consciousness about social and environmental issues, but could also share information and insights with a wider audience. That process reinforced the development of an identity that they were agents of social change.

> Ian: So because we're learning about things that we want to draw attention to and we want more people to know about, using media to do that, especially cameras and video, which is pretty accessible, it was incredibly helpful and essential to the whole process. It wouldn't have been the same if we were simply just learning about that and then doing little presentations out in the middle of this park for example. Not only can you reach more people, but you can replay it. Video is something that is incredibly useful for the things we were concerned about like injustice and environmental issues. Everyone is sharing videos nowadays. On Facebook your friends will share something and then you'll watch it and share it with another friend. You're less likely to tell your friend about like this newsletter that you received in email. It's just not quite as attention grabbing.

Ian highlights that digital video is disseminated widely in today's social media environment and that it is a readily accessible tool. He contrasts the reach of it with what could be accomplished by only doing an oral presentation of information in a public setting. He also sees the possibility of viewing a video viewed multiple times as one of its benefits for educational purposes.

> Sequoya: Well in a really simple way it's useful when documenting things. So you're able to document something and you have that product right there to go back to it. When people are saying things you have it exactly the way it's said. I think that influences being able to go back to things and have that information and

it's constantly in your head. It's always there versus you learning once and it's gone. I think it's connected to where activism work is going and heading. The way we are connected and getting issues out. Getting the word out is through media so I feel like we were doing it before it became a big thing.

Similarly to Gabe's response, Sequoya emphasizes the fact that video is a powerful tool of documentation. Her statement also reinforces the importance of this media to the process of learning about a given subject. The fact that video can be replayed is seen by her as having been advantageous for both reinforcing knowledge within the group, as well as reaching others with the messages of their stories. She also expresses feeling empowered by utilizing this tool effectively and has a sense of pride that the group was on the cutting edge of contemporary activism.

All of the GGs who were interviewed took pride in their digital storytelling skills. In those interviews several of them expressed that it was especially meaningful to them that their videos didn't look amateurish or something that a group of kids put together for a school project. The equipment they used was broadcast quality and the software that they edited on was the same as used by many media professionals. They worked hard so that their videos were polished, with high production values, while still maintaining an enjoyable and accessible aesthetic based on contemporary youth culture.

> Sequoya: The professionalism for me came through our quality. So, aesthetically pleasing because we still had that finished good look and at the same time it was really fun and relatable. A lot of our stuff was bold.

For Sequoya, it was meaningful for her to be able to produce quality media that people could relate to and that stood out. The time GGs invested in honing their craft allowed for both the development of artistic skills and greater technological literacy.

> Ian: I think our aesthetics are quite advanced. I feel like spending enough time filming things and having to use those things you filmed later for something like a video or an album of pictures means you have a better sense overall about what's

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a good picture, what's a good angle, why you would want to save a picture. Stuff like that. And I think we understand technology a lot more now because we used it so much.

Echoing Sequoya, Ian expresses feeling a sense of accomplishment as a media maker. By having the opportunity to have extensive experiences taking pictures and recording video he asserts that the GGs were able to develop their own sensibilities of what constitutes good visual aesthetics. Their sustained relationship working with media technology allowed them to become knowledgeable about it and adept at its uses. The GGs were actively engaged in working with production tools to create meaningful stories rather than being passive consumers of electronic media. Throughout several of the interviews they argue that the high production values not only made these videos stand out, but also served to advance objectives for empowerment and educating the public.

> Kierra: And it was hot! Compared to some other stuff. We would go to conferences and other people would be putting together videos but they weren't . . . sometimes the framing was off. I think we did a good job. Our stuff was top of the line. . . . We entered those film festivals and stuff but we were really using the media outlet to get our message across. And that's cool because if you have this piece of work that looks professional and people are, like, a bunch of teenagers did that, people of color did that, it destructs the stereotype. Yeah, we're talking about this activism stuff, but our shit is on point too. So it gives us a little more leverage for those people who aren't as . . . it makes people maybe more receptive. They actually have those skills to put this together; ok maybe I'll watch this. We were using our tool to the best of our ability.

The attention paid to aesthetic concerns and a high standard of quality was both a source of great pride, and a practical means for reaching a wider audience to educate them about social and environmental topics. This contributed to making digital storytelling an attractive and engaging practice for the participants while also fostering technological literacy through the regular use of cameras and computers. The emphasis on making

quality productions not only lent credibility to the message contained in the stories, but also served to dispel mainstream perceptions of minoritized youth.

Recognition as Storytellers and Change Agents

Many of the GGs interviewed express a sense of pride in having created digital stories that were enjoyed by others and that played a visible role in their community. Some of them mentioned feeling like they were on the cutting edge, or ahead of their time, in comparison to their peers because of what they were doing and learning. Getting public recognition and acknowledgment reinforced their participation in the program. The community screenings of the films they created were always a high point for everyone involved.

> Kyrie: That was great. That was always great. It was such a rush. It was such an emotional rush to see that many people turn out for it. And to have that kind of support. . . . I think it's important to acknowledge how many people support the Green Guerrillas and to see how the community here in Ithaca stepped up and made sure that all of the participants had such a good experience. And that experience helped carry them forward in their lives and to be just better people overall.

It is clear from her response that the screenings were meaningful events to her. She acknowledges that the high level of support from the broader community helped make them positive experiences that enhanced the GG's sense of self.

> Che: I think that something that was cool was, when we were done and had our screening, a lot of the naysayers realized that what we were doing was good. . . . Which was external validation that we're doing it, we're doing the right thing. . . . Like they had just accomplished something [and] a bunch of people, including total strangers, "weird" grownups . . . the Ithaca community, showed up and was all filled with praise. . . . Again we're talking about youth that don't always get recognized for what their gifts are and don't always get any attention and very rarely get positive attention and get told, wow you did something good and you're good at something and you have ability and we're interested in what you can do. I was proud, I was proud of them.

Che highlights a key aspect of the group's purpose, which was empowering adolescents who were considered "at-risk." The group became a well-known fixture in the local area, stemming from the movie screenings, as well as a variety of public speaking presentations and other forms of outreach at a wide array of community events. The acknowledgement and encouragement from peers and adults helped fuel and motivate their engagement with the program and the issues we dealt with.

During the group interview, I told those in attendance how I had just been to the Confluence[26] and that many people there had asked about them. Confluence attendees had told me examples of how the GGs had inspired and influenced their peers. One of their friends from a group based in Providence, Rhode Island called ECO Youth had become a mentor for that organization. He had been inspired by the GGs' bus, so he led his group to also convert a bus to vegetable oil fuel. ECO Youth made a fund-raising video and mentioned in it how they were following our example. Another youth group called the Toxic Soil Busters from Worchester, Massachusetts attended the Confluence every year and some of their veteran participants had also become mentors. One young man from that group told me how he remembered seeing the GGs give presentations in Detroit at the US Social Forum and Allied Media Conference in 2010, and that his had inspired him to make videos. Several people at the Confluence told me they looked forward to a new generation of GGs attending the gathering in the future. I reminded everyone present at the group interview how their work was respected by and had influenced other organizations.

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[26] An annual gathering of environmental activists described in greater detail later in this chapter.

From our local area to national conferences, GGs individually and collectively received positive feedback and recognition from people that encouraged all of us to continue doing the work and investing our energies in the program. Having an opportunity to be successful at an activity and gain a sense of accomplishment while also being acknowledged by others is an important aspect of the experience in assessing why the GGs appeared to be so engaging for its members. When we titled our second movie, we took the Black Panther Party's phrase "food, clothes, and shelter" regarding what oppressed people need, and added "community" — its full title is *Green Guerrillas V.2 — Food Clothes Shelter Community*. Community connections, feedback, acknowledgment, and recognition helped fuel the enthusiasm and sense of accomplishment of the group.

The story we told collectively about the use of digital media production in GGs as a central component of the program emphasizes a number of educational themes. One is about a group of adults working to create a bridge for teenagers to learning about new subjects to which they had not been exposed by using a familiar and attractive tool. The participants felt that their experiences with digital media in the program provided them with an educational opportunity that was successful because it was experiential and, by its very nature, through the inquiry aspects of research and interviewing, as well as the repetition of the editing process, reinforced knowledge. Another thread of this story is the sense of empowerment created for the youth participants through learning to find their own voice through digital storytelling and then recognizing their power to reach others through compelling productions. As they developed competence and moved into higher levels of accomplishment with their craft, they took pride in both their individual

accomplishments at developing their media production skill sets and the aesthetic quality of their collective video work shared with the larger world. This dynamic of outside acknowledgement and self-empowerment allowed them to push back against others' low expectations for their lives. The feelings of accomplishment they gained from skillfully creating digital stories that were recognized by a broader community helped foster a positive identity as youth environmental and social justice activists. This is fundamentally a story about the development of a community-based social learning project utilizing a unique pedagogy that fused aspects of social movements, Positive Youth Development frameworks, and media production to create engaging and fulfilling learning opportunities that supported a healthy and empowered sense of self and community.

Digital–Nature Aesthetics: The Story of Ecocinema

During the course of working on developing cinematography and photography skills, the GGs utilized their cameras as a tool to more directly engage with nature, which fostered an appreciation for the beauty of nature. After witnessing the students' positive response to outdoor field trips our first three summers, as well as their increasing levels of awareness about environmental issues, I decided to create more ways to get them viscerally engaged with the environment through nature photography and videography. We acquired our first HD (high-definition) video cameras in 2009 and embarked on a project we called *Ecocinema.* I facilitated walks in local parks and nature awareness exercises and games in order to heighten their sensitivity to the nuances of nature. We then took our cameras, binoculars, and field guides out to parks and nature preserves, where the GGs were encouraged to record anything they found interesting and aesthetically pleasing. They were tasked with gathering footage that would be edited into

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short videos with a musical background that would allow for a blend of nature and digital

media aesthetics. Based on the responses in the interviews,[27] the project seemed to be

successful in getting youth who did not spend much time outdoors to feel comfortable in

natural settings.

Several of the GGs related stories about their sense of accomplishment learning

more advanced cinematography skills, while also enjoying being outdoors witnessing

nature firsthand.

> Ian: I remember almost falling into . . . I forget what lake it was, but we were
> shooting the very first Ecocinema. We were trying to go way deep into the woods
> and I was recording this ant climbing up a piece of moss I think. And I think we
> were looking at an eagle and trying to see. Everyone was yelling look, look it's
> there, someone get it on film! I don't know if the rock we were on was tipping or
> something, or something with the roots, but we nearly fell right off into the lake.
> It was pretty funny though. I loved doing the Ecocinema. That was awesome!
> Being out in the wild and trying to catch a bee on camera and stuff. Taking your
> time to notice the fractal and amazing nature. It's just beautiful. I think especially
> if you're cooped up in town all the time you don't really get a chance to think
> about the beautiful entropy of just nature and how things grow over each other
> and use each other in different ways. It's not right or wrong, it's just there. That's
> a vivid memory. . . . I really enjoyed that trip a lot. All the Ecocinema trips were
> awesome.

For Ian the first time having this experience left a powerful and positive impression. In

addition to the challenge of putting cinematography skills into practice, there was the

opportunity to reflect on nature in a way that he found meaningful. Others also found the

process of gaining a new relationship with nature through the use of digital still and video

cameras to be beneficial to both their skillset and their identity as youth environmentalists.

> Maggie: When I got over the fact that I was surrounded by dirt [laughs] and
> surrounded by things — oh wow, insects everywhere! Bugs! . . . Everything was
> so pretty. I just wanted to capture everything. I feel like with Green Guerrillas was

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[27] It should be noted that the student participants who agreed to be interviewed for this study comprised a
majority of those who were involved in Ecocinema activities.

the one time thus far, even though it's been a while, that I've been out in nature the most. Even when I was younger, when I was a little kid and you're supposed to run around in the woods, I didn't really. But with Green Guerrillas I definitely got way more comfortable with nature. Cause I always loved looking at it, but I always have an issue with being in it. Because we had to go out there to film and all, it got me comfortable with it, and I was really happy to be able to capture it all on camera.

Maggie reminisces about the first Ecocinema field trip, where she and many of the others had to overcome their trepidation toward being so close to nature. However seeing beauty in it and wanting to be able to photograph and record it helped her to feel more at ease with the outdoors. She finds the activity gave her a great sense of satisfaction. Even though Maggie initially was averse to being up close with nature, the activity of working with a camera to capture footage smoothed that introduction. She attributes her participation in the program as bridging the gap between her aesthetic appreciation of nature from afar and being able to be more directly immersed in it. Ecocinema provided a vehicle for the GGs to develop and explore a personal connection with both the aesthetic and therapeutic aspects of nature.

> Kierra: That was really fun. I will never forget, using the manual focus was such an accomplishment for me. . . . Just being out in nature first of all was always therapy for me. Getting away. . . . You could just look at it and enjoy it but it felt good to also use a tool to capture that.

For Kierra, the activity had dual benefits. She got to achieve a sense of accomplishment regarding an important camera skill and feel her sense of well-being improved from being out in nature. Like Maggie, she finds value in the camera being the vehicle to developing a positive association with nature.

> Gabe: It was fun being out there. Besides being in Green Guerrillas I didn't really interact with nature too much. Being out there and actually filming it — it was two things at once for me. Because there's, one, I'm focusing on nature and, two, I'm focusing on nature through the camera. It's pinpointing what I'm really looking at. . . . I like the waterfalls. That was one of the favorite things for me to

record. I didn't really know too much about nature at that point until I started going out. Now I go on walks by myself a lot. I go to the dams a lot and just sit there.

Gabe, like most of the others, did not have much direct exposure to nature until participating in GGs. The experiences working on Ecocinema projects showed him the value of spending reflective time outdoors, which he continues to partake in on his own volition, as he has found it to be beneficial in fostering a sense of peace of mind. He also found value in the use of the camera for focusing his attention on what it was he was attracted to outdoors. Throughout the interviews the youth alumni of the group expressed positive memories of these activities. The stories they related about those times highlight how the tool of digital cameras, when coupled with excursions to local sites of natural beauty, was a way for them to become better digital media producers while accomplishing programmatic goals for environmental education.

Ecocinema was not an isolated activity and existed in a dynamic relationship with the group's other community organizing and media production activities. Significantly, as the issue of fracking was starting to emerge in our area, the youth participants felt very strongly about challenging it, as they did not want to see the landscape they were learning to appreciate become despoiled. During the interviews, some of the GGs related how Ecocinema was beneficial to the group's other work. Ian spoke about how nature cinematography and practice with the cameras on these trips enhanced their ability to do documentary video. Kierra highlighted that the Ecocinema projects existed in a holistic continuum with the other activities of the group:

> We worked as a team. We all had different shots from different things and then Ian put it together into this nice looking piece. So the teamwork and doing it independently, having my skill that I used to put my little piece in there, it was good. That was the one thing about Green Guerrillas. Even though we were

always talking about activism, social justice, and equality, some people may not grasp what we were doing. They may not understand we're creating dialogue talking about these issues and bouncing ideas off one another so that we can organize. . . . You do the organizing stuff but you also have something tangible there. So when we would go out and document, do the nature cinematography, it was good, you would have something tangible there.

Kierra's statement points out the multiple layers of activities existing within GGs. There were personal interactions taking place both within the group and externally in the process of doing community organizing work that were supported by there being video products that people could interact with. These tangible media expressions of the group were the result of a process that combined individual exploration and teamwork, which projects such as Ecocinema emphasized. The group maintained a philosophy of the interconnectivity of its various programmatic components, which this interview excerpt speaks to. There was no ideological separation between nature appreciation and advocacy activities.

As these responses from the GGs illustrate, Ecocinema held meaning for them as an educational and awareness expanding practice. It allowed for the development and refinement of higher-level technical skills, while providing an opportunity for experiencing nature that was new for most participants and fostering reflection on nature's positive influence on their lives. When I conducted the group interview, we watched all of the Ecocinema videos together on the GGs' YouTube channel.[28] Everyone remarked that they were extremely proud of how the videos were shot and edited.

As a project with explicit environmental education goals, Ecocinema seems to have been successful at engaging the participants by introducing contact with nature

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[28] Ecocinema pieces and several other GGs videos are at http://youtube.com/user/stampcny/videos

through the use of a familiar tool. The focus on nature aesthetics provided an avenue for participants to connect with the therapeutic benefits of being outdoors. For most of them this was either their first or their most sustained experience in a natural setting. Though some expressed reservations at the start of the project (such as concerns about insects and being out all day in the summer heat), I remember seeing the positive expressions on their faces, as well as their relaxed demeanor at the end of every field shoot that suggested to me at the time that this was a useful and successful learning modality. The framework of having an assignment to go out and record birds, insects, and plant life and also simply the opportunity to be at ease in an outdoor setting had a positive influence on the youth participants. The enthusiasm with which the GGs related stories about these experiences in their interviews reaffirmed our operative theory going into the project. Electronic media could be utilized effectively to foster contact and a sense of comfort with nature, while also supporting and broadening the group's community engagement activities on issues of protecting the environment. As an environmental educator and activist, I subscribe to the ideal that time spent in close contact with nature can connect people to the beauty and value of life, and further can foster a willingness to challenge environmentally harmful practices.

The GGs vigorously advocated for renewable energy and against fossil fuel extraction through digital storytelling and public outreach that was motivated by their growing personal connection with the environment. Around the same time that we started doing the Ecocinema project, the group also started researching the issue of hydrofracking. Documentaries and several websites were just starting to come out with information about how negatively it was affecting people and the environment,

particularly water, in places like Colorado. As the GGs learned that it was being planned for our area, and was already becoming an issue just south of us in Pennsylvania due to a massive influx of drilling into the Marcellus Shale formation there, a significant connection took place in their consciousness. As a group they began to ask questions, such as how could this be planned for our area when it is full of natural beauty and has relatively clean and good water? Everyone in the group responded differently to the various subjects we investigated. However, it would be clear when subjects were making sense to them or resonating with them in a significant way. There would be "aha" moments where it was clear they were "connecting the dots." This was an important pedagogical premise of the program — seeing the interconnectedness of these issues to other issues and, most importantly, to their own lives and values.

When they had a personal connection they were quite willing to take action based on their own initiative, as exemplified by the walkout at Ithaca High School to protest equity issues for students of color and the antifracking campaign. They saw that these were problems that needed to be addressed and that they were in a position to do something about it as media makers with a respected presence in the community. Collectively, the GGs take pride in being among the early voices speaking out against fracking in our area and doing everything we could to raise awareness of it. The way that the youth participants passionately addressed this issue supports the contention that nature's beauty can inspire people to protect it.

The GGs were present at two DEC public comment hearings voicing our concerns in a unique and creative way. At the hearing held in Ithaca at the State Theater, everyone in the group portrayed a person in an area where fracking was taking place. Ian played

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the part of the "bad guy" — the fracking company spokesperson. Everyone else in the group represented community members of various backgrounds, such as a rancher and a mother of a newborn. They had all memorized lines that were direct quotes from actual people. This presentation of compelling real life testimonials resonated strongly with the audience and there was loud applause and cheering when it was finished.

> Gabe: But yeah, doing that, that brought a lot of awareness to me cause there was people that started to talk to me based on, they had seen the video on YouTube or they were at the State Theater that night. And they were like, oh I seen you, so you know what fracking is and it's really bad. We would talk sometimes. Not a lot, but people would stop me, like "yo GGs what up?" [everyone laughs]. It's cool that it brought about that awareness to a lot of people even though it wasn't popular really. Around here it's popular but not back then.

We also conducted a "get out the vote" campaign for a grant competition offered by Free Range Studios entitled Youtopia that would have provided funding and technical support for us to create and distribute a professionally produced animated video segment against fracking through major media outlets. Every event we went to we asked people to go online and vote for us. Most also left comments in the area provided by the website. We came in second place and were only edged out from taking first in the last hour of voting by a group with a 20-year history and a large base of international support. Despite not winning the competition we were proud of how well we did, considering we were a small, young, grassroots organization primarily consisting of teenagers. All the comments people made when they voted were very encouraging as they spoke about us in glowing and supportive terms.

The campaign we participated in against hydrofracking for natural gas in New York provided many opportunities for public engagement. As part of our outreach

activities, we also crafted our first radio show, which was highlighted as an empowering moment during the group interview.

> Sequoya: I think the most empowering part for me was just the response that people had. Cause a lot of times it's like, yeah, cool we're doing stuff, people might buy it, but do they really give a fuck? Cause it seems cool, but hearing people's responses, like oh you guys are awesome, I love your thing. That's cool — you actually know what we're doing. That radio project we did one time. . . . I remember someone had made a comment about it. They were like that's so awesome, that's so official.

> Ian: I want to hear that again. That was really awesome. It was really fun to make. We did an awesome job. I was really proud of it.

> Sequoya: I would use that on a resume: I've done a radio session before.

Both Leslie and I had experience as radio DJs that we brought to the table for this radio project. However the youth participants themselves already had developed a strong set of storytelling skills through making the group's videos that equipped them well to compose a compelling radio show. We worked with members of Ithaca Community Radio to establish the parameters and had the GGs individually edit different segments, which were then brought together into a complete program. While their responses in the interview could be seen as somewhat self-congratulatory, they note that it was the favorable responses from community members that affirmed for them the quality and value of their work.

The Ecocinema project can be seen as successful in achieving some fundamental environmental education goals. All of the participants who were interviewed spoke about becoming more comfortable being in nature, as well as personal benefit in experiencing the mood-enhancing aspects of being immersed in the outdoors. The use of digital cameras provided a bridge between the familiar — electronic media — and the new — spending extended time in parks and nature preserves. The structure of having an

assignment focused on the aesthetic qualities of nature provided a framework for them to become more comfortable in an outdoor setting. While all of them expressed finding enjoyment in the activity, the fact that many of them continue to seek solace in nature several years after the project, and that they were highly vocal and active participants in an environmental campaign which they identify as a source of pride, speaks to the activity addressing nature deficit disorder and getting learners engaged in addressing environmental quality issues.

The narrative that Ian enthusiastically told about the first Ecocinema trip was filled with references to the sense of excitement he felt while participating in the activity. He clearly had positive associations with the challenge of gathering attractive footage and having an opportunity to witness how nature functions in a visceral way while reflecting on it intellectually. Maggie's narrative highlighted the transition from her childhood distance from the outdoors despite finding nature aesthetically appealing. She related how the project afforded her an opportunity to step outside of her "comfort zone" and gain a closer perspective of that beauty. Gabe's response similarly emphasized the newness of having first-hand nature experiences, and that by having to use a camera it made for a smooth introduction. Kierra spoke about her sense of accomplishment learning to manually focus a camera, as well as finding time spent in nature to be personally therapeutic. She noted that Ecocinema was not isolated from the activism that the group was most known for. Her narrative emphasized the empowerment that she experienced on multiple levels.

While all of the stories told by the GGs used terms such as "fun" and "enjoyment," there were also themes of transformation, growth, and empowerment that they carry with

them well after completing this project (four years at the time of the interviews) that speak to the power of creative environmental education activities to foster learning experiences that have lasting effects on participants. Though some details may have become obscured through time and the vagaries of human memory, such as Ian's reference to recording footage of an eagle in flight (it was actually a great blue heron as attested by the video), the fact that he can recall not only the powerful emotions the experience invoked but also many other details is a testament to the impact on him of this educational experience. The others also shared enthusiastic recollections of the project. Taken as a whole, the story of Ecocinema is one of an environmentally conscious media program finding a simple and accessible means to get its participants to engage more directly with nature. This in turn strengthened their sense of environmental ethics and identity as change agents who could speak out on behalf of the land for which they felt a growing personal connection.

Indigenous Ways of Knowing

For the youth in the program, there were a wide variety of opportunities to be exposed to Indigenous culture, interact with Indigenous people, including elders and community activists, and incorporate elements of Indigenous practices and philosophy into their everyday activities. It is an important aspect of our collective's story that perhaps was not apparent to people not directly associated with the group. Only a few GGs during its five-year history had Indigenous backgrounds or heritage. However, what seemed to be well received by all of the youth participants was the experience of a teaching format that was unlike school and was based more upon Indigenous models of learning that emphasize mentorship, modeling, and hands-on experiential learning.

Indigenous ways of knowing were explicitly and implicitly a part of the very fabric of GGs, from the philosophies informing the group's values to the pedagogical practices and the content of some of its videos. The group interviewed a variety of Native people for our videos, travelled to cultural festivals and powwows, and visited farms that the Cayuga and Mohawk people had acquired to reestablish a presence in their traditional homelands.

Once we had purchased our own bus in 2008 and started traveling extensively, we would camp out every summer at the Mohawk community of Kanatsiohareke[29] (near Fonda, NY) during an annual gathering of community activists called the Northeast Climate Confluence. All of the GGs who had gone on those trips expressed a strong appreciation for the beauty of the land there. Sequoya felt particularly moved by her experiences there to express that at this place "it was a little more spiritual for me, walking through nature, feeling the energy of ancestors, and the beauty of nature in itself." The time spent at that community was primarily unstructured, allowing for exploration and introspective reflection on the land. There were a few planned activities and workshops taking place while people took turns doing chores, but a good portion of the time the GGs just got to be young people interacting with others attending the conference, many of whom were from urban areas with little contact with the outdoors.

The Confluence was an opportunity for the attendees to learn directly about Mohawk culture and history from Tom Porter, a highly regarded elder, spiritual leader, and founder of the community. On the first or second day he would welcome everyone to

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[29] For history of this community see T. Porter, *Kanatsiohareke: Traditional Mohawk Indians Return to Their Ancestral Homelands* (2006). Greenville Center, NY: Bowman.

the community and offer an opening ceremony — the Thanksgiving Address (which is

performed at the beginning of most Haudenosaunee gatherings and ceremonies) — for

the event, sharing a fundamental element of local Indigenous tradition.

> Gabe: The Thanksgiving Address. That really spoke to me. It's one thing to be thankful and aware of what's going on. He broke it down to every level. And that was an equality that's not seen very much. It put things all on one level. Like I'm thankful for the blades of grass that we're sitting on. You're not really thinking about that. It's important to say because these are things that are literally affecting your life, you're touching them right now and you wouldn't be paying attention to them. . . . Yeah, I learned a lot from him. It put things in a different perspective for me.

For Gabe, being exposed to relating to the world with gratitude and appreciation helped

expand his own awareness. He feels it was a valuable contribution to his personal

development. He highlights that his Confluence experience was meaningful to him for

opening his consciousness to a new worldview. Others spoke in the interviews about

having similar experiences with hearing the Thanksgiving Address. Being present in the

community for several days afforded an intergenerational and direct learning experience

about Indigenous people's history that resonated with the GGs who worked consistently

to develop critical consciousness on socio-political issues.

> Kierra: I thought it was welcoming. I'm just like a visual learner, so also that aspect of actually being there — it's tangible. It's not just talking about this textbook and these abstract ideas of how their land was stolen. You actually get to see like, ok, they bought this back. They bought their land back in a community effort because it was taken away and they're telling you this is what it means to me. So it's more than just learning about it. We're actually here; they're actually talking about it — his ancestor, his great-grandfather. So it just made things more realistic for me. And also it provided . . . I don't think there would have been another time where I'd go to a place that's so spiritual.

Throughout the interviews, as these excerpts highlight, the GGs expressed that camping

out in a beautiful natural location with a rich historical legacy, while learning first hand

about Haudenosaunee environmental philosophy from a deeply knowledgeable elder, was

an enlightening and memorable experience. The location itself, as well as the sincere reverence for the land held by the community members, facilitated a sense of special connection with nature that some GGs saw as being spiritual in character.

Indigenous worldviews on the environment shaped the ethical foundations of the group's work from the beginning. The values and practices of the two co-coordinators and primary mentors of the program were heavily influenced by our own experiences with Indigenous elders and communities, which then carried through to our work with the youth participants. Many of the interviews noted the modeling and intergenerational learning aspects of an Indigenous pedagogy as they were experienced in the program.

> Sequoya: I think it was just really ingrained in how you guys lived. Your ideals came through a lot in how we acted and what we did in Green Guerrillas. That was an example to follow and then question and learn more about. Again with the networking thing, meeting people, and talking with people like Joe. I remember when we went out to his place.

Joe Soto, a Taino and member of our board of directors, had invited the GGs to come to his home and fish at the pond there. He was one of the many Indigenous people that the youth participants were able to have personal interactions with and interview for our digital stories. Being exposed to Indigenous concepts and values through face-to-face experiences gave the GGs an opportunity to understand a perspective that many of them found to complement their own values and beliefs.

> Maggie: There's just something right about it. You just feel right I guess. You did this too. When we would eat something you would thank the animal and . . . it makes sense to me.

Similar to Gabe relating about being exposed to the Thanksgiving Address through Tom Porter, Maggie finds being thankful for those things that sustain our lives, such as the animals and plants we eat, to resonate with her. She saw this articulated by the variety of

Indigenous people she had the opportunity to meet, as well as being demonstrated in some of the everyday activities of the group like sharing a meal together.

> Kierra: Little practices that we did, or you would even just mention, today is the start of the new cycle of the moon or whatever, we would get a little glimpse of that also. . . . You talk about Mother Earth and even when we would eat, when we would have our gatherings, we would get a rock and put little pieces of our food on it to give back to nature.

Echoing Maggie, Kierra articulates the value of being exposed to subtle aspects of the worldview of the GG's founders that included gratitude for and an awareness of cycles in nature. By having an example close at hand through Leslie and me, in addition to the experiences with many Indigenous people through the group's activities, the youth participants got to witness what Indigenous environmental ethics looked like in practice. This philosophical orientation also influenced some of our group-building activities. We would hold talking circles[30] when someone in the group was going through personal difficulty or there were conflicts or other internal issues that needed to be dealt with. Whenever we went out of town on a trip we would stop and have a moment together where we burned some sage or sweet grass and discussed our intentions and feelings as a group. From an Indigenous paradigm these practices exist to collectively bring people's minds together "in a good way," for us to have positive experiences and work harmoniously with each other. These influences of Indigenous philosophy and ethics in our work were noted by all of the GGs in their interviews, some of whom also mentioned that they appreciated that its presence was nondogmatic and was not forced upon them.

The video interviews that GGs did with Indigenous leaders and environmental activists also gave them insight into Indigenous values and how they influence

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[30] In a talking circle everyone is given an opportunity to speak at length without interruption.

contemporary struggles for justice. The Native Youth Movement (NYM) video was the

first editing project for Ian. As he watched the footage over and over again, and did more

research in the course of editing, he was moved significantly by the story.

> Ian: There's always NYM — part environmental, part social justice. You had the
> whole clear cutting of their indigenous lands for these stupid ski resorts that they
> have way too many of anyway. I thought that was ridiculous. Looking up how
> many ski resorts they have in just that small area and it's not even for people who
> live there really. It's for the tourists who visit there whenever they're off from
> Wall Street or wherever the hell they live. I don't want to sound angry about it,
> but it is a thing you can get angry about cause someone uses that land for things to
> survive. They were hunting on it. That's where they get a lot of their food from.
> You have people simply destroying that whole ecosystem, not just the trees, but
> the animals that rely on the trees and all of that simply to build a slope to sled
> down essentially. It's ridiculous.[31]

This is one example of the types of videos we would produce that focused on the

relationship of Native peoples to their land and highlighted environmental injustices

taking place there. Doing background research during the pre- and post-production

phases and conducting the interviews provided exposure of the GGs to Indigenous ways

of knowing and Indigenous issues, particularly in regard to the environment.

Kyrie, the one participant in the program born and raised in a Native community,

expounds on a central philosophy of the Haudenosaunee that was influential on the

values and practices of the program:

> For us, we're here as guardians over everything, and a lot of the purpose for why
> we're here is to try to make sure we're taking care of what was here and
> protecting it for the next seven generations. . . . So whatever it is that we're doing,
> whatever work we're doing should support that so they have and are living in a
> better world than what we are in today.

It was this seven-generations concept that guided our work, where we sought to both

challenge environmental and social problems in society at large, while also promoting

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[31] The GG video he is describing can be viewed at: http://www.youtube.com/watch?v=uKvx3_ZwRHs

actions that we could do in our personal lives to reduce our environmental impact, eat healthier, and decolonize our minds from the effects of racism, sexism, and other harmful ideologies. Che shared the thought that "I think that the most beneficial thing about that was for people to just get experience with — there's another way to relate to the environment. Planting the seeds for the idea of environmental stewardship."

The narratives related by the participants about group experiences with Indigenous ways of knowing speak to significant moments of realization about human–nature relationships that influenced their sense of environmental ethics. Gabe's story about hearing Tom Porter give the Thanksgiving Address reveals a moment of enlightenment for him as he learns of the importance of appreciating everything down to the smallest blade of grass. Kierra's describing the Confluence and staying at the Mohawk community of Kanatsiohareke emphasizes the educational aspects, which she found valuable for being able to experience a story of survivance first hand through the words of an elder. She, like many of the others, also attributed a sense of spirituality to the interactions with the people and the land there. Ian's recollection of Native Youth Movement is not surprising as that was the first video he edited. Repeated exposure to the content of the interviews during the editing process emphasized for him the injustices that take place when Indigenous worldviews and ways of life collide with capitalism. While special events such as the Confluence provided intensive experiences with Indigenous land, elders, community, and ways of knowing, it was also the everyday interactions with the adult volunteers and interview subjects that made an impression on the youth GGs. Maggie and Kierra both touch on the modeling and mentoring that took place in the

program as the philosophies and practices of the coordinators were seen as examples to emulate, as well as points of engagement for discussion and learning.

<center>Social-Environmental Identity</center>

Environmental Ethics

One indication of whether actions and ideas are likely to be carried forward for several generations to come is how well they are accepted by the current generation of young people. All participants interviewed for this study expressed a strong sense of personal responsibility for the environment. Most of them explicitly attributed their environmental awareness to participation in GGs. Those experiences provided a foundation for a set of environmental ethics that they still held several years after being in the program.

> Greg: I feel like our environmental outlook was similar to the Indigenous native people. It was to take care of the environment so it could take care of us. . . . People don't value the environment the way they should. There needs to be more people who do value the environment because we can do all the things we know are good for the environment, but if we're only a small group of people, we just have to have more people jump on board, otherwise it's a wrap for us.

Greg sees a direct correlation between the ethics expressed in the program and those of Indigenous peoples, which is not surprising given the group's focus as presented in this chapter. He shows concern about the reciprocal relationship between humans and nature, as well as the pressing importance of getting society at large to care about and be engaged with environmental issues. His response also highlights the sense of urgency that many people are feeling about the state of the environment.

Others in the group similarly spoke about an intrinsic connection between people and nature, along with a societal cognitive disconnection whereby many people don't

think or care about environmental issues. They stressed the importance of ethical

environmental attitudes and behaviors gaining traction with more people.

> Patrick: Too many people [are] unaware of how they contribute to the destruction
> of the planet, so they keep on doing what they are doing. We must start informing
> the youth at a very young age and get them accustomed to recycling, solar energy
> and eating fresh food.

He thinks that all young people should be offered similar opportunities to learn about

environmentally responsible practices like the ones that he had in the program. In his

assessment, education and hands-on experience are crucial for fostering change. Sequoya

offers a philosophical perspective on the importance of human–nature connectivity and

an ethical consciousness that she feels would lead to less selfish behavior on the part of

humanity:

> I think people should look at the environment and nature, hopefully like they're
> looking at themselves, and always being conscious and aware of it as a life form
> and really nurturing and taking care and holistically thinking about all the factors
> in life.

This statement reflects a deeply held environmental ethic that recognizes the value of

nonhuman entities in nature. She hopes that the same care and sense of self-preservation

that most humans have toward themselves could be extrapolated to the environment at

large.

> Several GGs expressed a sense of personal responsibility to carry on some of the

practices they had learned about in the program.

> Maggie: There's something in me that snapped back in the day that makes me so
> like I can't not recycle something. I just kinda have to. . . . I do care about the
> environment and the animals because we only have one earth. We just have one
> earth. It sounds cheesy but it is what it is. . . . I do care, and I wish I could do
> more.

In addition to Maggie, other program participants stated that they do what they can to maintain environmentally conscious practices in their personal lives, while also being reflective that they felt there was more that they could do as individuals. They also expressed a mixture of hope and concern about the current state of affairs in the world regarding environmental issues, which is not surprising, given the large amount of time that the group devoted to environmental activism and public education. Gabe spoke about how the anti-fracking work had influenced his sense of ethics and agency:

> We're the ones who are supposed to do something about it. And we're the only ones who can do something about it. . . . It definitely made me feel like I was a part of changing it. I was doing something about it instead of just saying, hey we should do something about it.

From a continued dedication to being conscientious in their own lives, to speaking out about environmental issues, all the GGs interviewed felt strongly about maintaining an ethical relationship with the environment that they attributed to their participation in the program. Hands-on experiences with nature, making videos about a wide variety of environmental topics, exposure to Indigenous environmental philosophies, and being involved in the anti-fracking movement all contributed to a well-defined sense of their responsibility to the earth and coming generations.

Personal Meanings

In addition to finding a pedagogy centered on digital storytelling, environmental learning, and Indigenous ways of knowing to be interesting and engaging, the participants felt strong personal connections to the group. These feelings were illustrated in the personal meanings, sense of identity, and life lessons they articulated in their interviews.

> Greg: I've been dealing with racism all my life, since the day I was born. . . . Green Guerrillas helped me to understand my experiences in the world. It also made me understand there's some people you can talk to and get through to them,

open their eyes and they'll listen, and there's other people that just are just unwilling to change or listen or do anything other than what they're doing. . . . I also kinda feel that I learned that you can do a lot. Like the walkout thing. That was crazy. Cause it started with me and Patrick talking after that school board meeting and the next day the whole school is marching. Well not the whole school, but a lot of the school is marching around, a big group of people and people are listening to us. I thought that was kind of amazing.

For Greg, who had grown up in a rural town just outside of Ithaca, where he was one of a very small group of African-American students in that school district, the GG's focus on issues of social justice resonated with his life experiences, while also placing them in a larger context for analysis. He relates a vignette about the sense of empowerment he gained when he and other GGs took a leading position in a protest against racism in school. In addition to social injustices that were blatant in their lives, the GGs learned about how critical and holistic thinking could expand their consciousness.

Gabe: One of the major things I took away was to question things. A lot of the times I would see things and not really . . . not only not question them but not really think it was too important. Being in the GGs brought a lot of things to my attention that affect me that I didn't know affect me. . . . That was a major thing I had to really grasp cause certain things that my family would say I would just accept.

For Gabe, the development of critical consciousness was one of the most significant outcomes for him. As noted earlier in this chapter, the information he was exposed to in the program has affected his current dietary choices. Other GGs who were interviewed expressed that there was a depth to the identification they had with the group, due to its connectivity with their own life experiences, which has carried with them to the present.

Sequoya: We were always doing something and we were always engaged somehow. I feel like that was a big thing for me when I defined activism cause Green Guerrillas became a huge part of our lives. Green Guerrillas was our lives in so many ways. The things we learned were us. . . . It's formulated a lot of the background for the work I'm doing now. It expanded my knowledge on various topics. Experiences of traveling and networking and meeting with people. It

sparked my interests into what I'm doing now, really thinking about social change and how to bring art into that. Challenging systems and institutions.

That the group dealt with issues which were relevant to their lives as adolescent students of color helped facilitate their personal identification with it, according to Sequoya. She feels her experiences in the program were foundational to the work she has gone on to do in college. The commitment to social change that she experienced as a GG has carried forward into her current life and artistic work.

When Kyrie returned to her home community of Akwesasne she became involved in community organizations. She brought the lessons she had learned and experiences from GGs to her work creating opportunities for advancement for young people in that Mohawk territory.

> Kyrie: Having that experience I was able to make the case at that table cause I've seen it work someplace else. And I've seen positive outcomes some place else so I know it can work at my home community. So that was a lot of what I drew from working with the Green Guerrillas.

Similar to Kyrie and Sequoya, Kierra has continued to use the lessons, perspectives, and skills from the program in her present life. As the youth participant with the longest tenure in the group, she identified deeply with the focus on personal development and empowerment.

> Kierra: The identity part of Green Guerrillas was a big part for me. . . . Trying to find your place and what you believe and developing your values. . . . Every time I talk about Green Guerrillas or anything related to it I just always light up. I get so excited. And I have never been so passionate. I'm not even as passionate about writing poetry as I am about the whole social justice, activism, Green Guerrillas talk about white supremacy shit. I just get so . . . that's just me, that's who I am. I'm excited now. I don't know if you can tell [everyone laughs]. . . . Being a part of the Green Guerrillas, like whatever we stood for, being an active part of that . . . gave me a sense of purpose. Cause I was working towards something. You know how people become Democrat or Republican? My party was Green Guerrillas. . . . And I put a lot of effort into it. I put work into it. There was the whole personal

development aspect. I guess that's what it meant to me. It helped me develop who I am.

Kierra's passion is evident in her statement, as is the close association she feels with the values of a group that she helped shape during the course of her long-standing participation. Others concurred about the significance of GGs in their life experience.

> Ian: It's one of the best things I did ever, so far in my life. . . . I think it just felt really good to create something that you know would be used and enjoyed by other people. . . . Green Guerrillas definitely was about. . . obviously friends and having fun and learning at the same time, but it was also growing as people and that's definitely what we all did I think.

Ian highlights the value he sees in creating digital stories that were shared with others. He notes that, for him, the group was about relationships and personal development within a shared learning community. There is a strong association in his mind with participation in the group and positive outcomes for himself and his peers. His enthusiasm about having been a part of GGs, as well as his emphasis on the important role of digital storytelling and personal development, was echoed by others during the interviews.

> Patrick: Honestly, at first I thought that I was just going to be taught how to use different angles with a camera, get good clean shots, cut, copy, paste clips together — things of that nature, and I was taught all of that and much more. The GGs showed me different aspects on environment, political, civil rights matters that I wasn't in tune with at the time. I was surprised at how much they [Jason and Leslie] actually cared about the knowledge we did or didn't know and helped us be better human beings in more ways than one. Joining the GGs is probably the best thing I did in my life.

A critical examination of this study could argue that the effusive positive descriptions of the group by the interviewees was due to them telling me what they thought I wanted to hear due to my role in the group; however, I would suggest something else is at play.

In addition to being exposed to an engaging and compelling curriculum and pedagogy, they experienced adult mentors who were deeply invested in supporting their

educational goals, personal growth, and overall well-being. The fact that they continue to

participate in reunions of the group speaks to the strong personal identification they have

with it and the personal meanings they have associated with having been a Green

Guerrilla.

> Maggie: It was a good experience. I feel like everybody, every single person, I don't care if you're like 80 years old, if you haven't been in this program, you should be in this program. . . . Even if you come out of it not believing anything, at least you got a different side of the story. . . . We were fighting for our rights.. . . See that's why Green Guerrillas was my thing cause it wasn't like everyone sit in a circle and hold hands, eat applesauce from the same jar and sing our worries away. No! Heck no! If that's what it was about I would've fallen asleep. So I'm glad we were a little feistier than the average group of activists. That's my final thought — that everyone should experience the Green Guerrillas program.

> Maggie's enthusiasm for the group is apparent when she asserts that all people

would benefit from the experience of being in it. The adult volunteers were also deeply

affected by their participation and the relationships that were created in GGs.

> Che: It was an emotional connection. The youth who participated — their triumphs, and when they fall — it affects me, I feel proud and excited when I hear they're doing well. . . . It's a small tight knit community, it's a family unit, it's the kind of connection that people are going to need to have to survive. And I felt like I needed it too to survive. Ithaca can be sort of a challenging place sometimes for people of color. . . for anyone maybe, but certainly for people of color. Having basically a group. . . made up of youth of color and adults of color was pretty cool. Again it was a family. That's all there is to it.

These responses reflect a profound connection with critical consciousness and personal

empowerment that the participants drew from their experiences in the program. Gaining

an understanding of the social dynamics of oppression, questioning the status quo,

standing up for themselves, and applying what they learned to their current lives were all

themes that emerged in the interviews. Many of them felt strongly that this was an

educational model that others should experience. Everyone expressed that the program

had a significant influence on his or her life.

As the co-founder and co-coordinator, I invested a huge amount of time, energy, and resources in the group. The personal meaning for myself was rich and multilayered. It provided a creative and dynamic outlet for me to channel my passions for media production, social justice, environmentalism, and youth development and was very fulfilling. Witnessing the growth and camaraderie in the youth participants and adult volunteers alike, as well as the relationships developed with a wide variety of communities both local and distant, was a powerful and eye-opening experience. The knowledge that it was a positive influence on all the lives it touched continues to be deeply rewarding. I had the honor and privilege to develop my skills and aptitude as an educator while having fun with a remarkable group of people. I had no idea when we began working on bringing the program into fruition that it would have this much of an impact on people, including me. It has shaped many facets of my life, including my academic pursuits, as evidenced by this dissertation. I will always be grateful to everyone who was involved and supported our vision for an exciting and engaging way to foster personal empowerment and environmental–social consciousness among youth who are too often marginalized and minoritized by the social status quo.

Social-Environmental Identity: Summary

The GGs interviewed for this study express a strong sense of environmental ethics that they attribute to their participation in the program. Some associate it with the Indigenous ways of knowing to which they were exposed. Many of them articulate the need for people to take responsibility for the well-being of the environment. They mention the importance of personal actions such as recycling, using renewable energy, and being conscious of food choices, as well as the need for taking action on issues like

fracking. The social capital they gained from experiencing mentoring, intergenerational learning, peer-to-peer interactions, and the development of a sense of family is significant. The meanings for the youth and adult volunteers participating in a group that produced personal and social change resulted in a strong self-identification as a Green Guerrilla. It should be noted that throughout their interviews they frequently used the words "we" and "us." This use of a plural pronoun signifies a relationship with others. Together we learned a way of being that honors people, land, memory, knowledge, creativity, conviviality, love, and compassion. All of us continue to carry these empowering experiences, ethics, and meanings forward into our lives and work.

Critical Reflection

While the responses quoted in this chapter paint a glowing picture of the program, it should be noted that there were a variety of challenges at different points throughout its five-year existence. During the course of the program some of the teen participants faced significant academic, social, and family challenges that required guidance and support. Two of the participants would go on to serve time in state prison after their involvement in GGs. However, all of them did successfully complete high school, and some have gone on to college. From an organizational standpoint, there were the typical struggles common to nonprofit organizations to attain the requisite funding to operate the program. At the end of the summer of 2011, it was a lack of funding coupled with all of the current participants graduating from the program at once[32] that prompted us to close it down despite its many successes. The initiation and maintenance of the program required

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[32] Previously one or two participants would graduate from the program at the end of each summer and be replaced.

donation by Leslie and me of a significant amount of time, energy, and financial resources that eventually became unsustainable. This is an important point for community-based environmental education programs to keep in mind. An engaging pedagogy is only one component, albeit a crucial one, affecting the long-term viability of a given program. Financial and human resources are also major factors.

When asked if there were any ways in which the digital storytelling focus detracted from the learning experience, all of the GGs interviewed stated that they felt it was an asset and not a hindrance. One person suggested that perhaps at times that individual was more focused on the mechanics of the video editing than on the content, though they qualified that statement by saying that they felt overall it was a good way for them to learn about things, as they were not keen on reading. Another response suggested that the professional video production skills we were teaching could have been too great a challenge for some as they learned to use the equipment to capture exactly what they wanted and then convey that information to an audience. One GG noted that, being a shy person, they experienced some social anxiety around conducting interviews and doing public speaking. Another mentioned that the only negative experience he had in the program was that we were outdoors a significant amount of time in the summer when it was very hot. Some of them mentioned that the tedium of logging footage was challenging. One GG noted that during the last months of the program's existence there were two newer participants who weren't as engaged as the rest, which led to a focus on more technical skills and less on dynamic discussions that they were accustomed to.

It is certainly challenging to offer my own critical assessment of the program due to the enormous amount of energy I devoted to it and the natural desire for those efforts

to be seen as successful. However, throughout the duration of the program we sought to maintain a continuous assessment of what was working and what was not. During the first three years I noted that we focused heavily on the media production and activism aspects, and I felt that more direct engagement with nature was desirable for a program with environmental education goals, hence the creation of the Ecocinema project. Though I had high hopes that it would develop environmental literacy, such as the ability to identify various flora and fauna, it became apparent that the main benefit of the project was in the simple act of getting young people outdoors and appreciating the beauty of nature. My own development as an educator was aided by both the real-life laboratory of the GGs and my graduate school experience. Right around the time of our first public screening in the summer of 2006 I started my MS/Ph.D. program in the Department of Natural Resources. I became acquainted over time with literature on Indigenous, environmental, and critical approaches to education, as well as the field of Positive Youth Development, all of which influenced my thinking. It was validating to find out that other educational researchers and practitioners were discussing many of the practices we had established in the group.

In terms of participant engagement, I think we were very fortunate to have had the individual teens involved that we did. The majority were invested in their identities as Green Guerrillas and worked hard to create digital stories, and be engaged in community affairs and discussions, while learning and growing as a collective. Any assessment of engagement based on the program's pedagogy should take that into consideration. Due to limited resources, only a small group of teens (typically 6) could be in the program at a given time. The first cohort was selected from those who were referred to us from local

youth employment programs as having an interest in digital media. After that first summer, there was an interview process for prospective participants that was created by the collective and consisting of questions that were designed to assess compatibility with the program's orientation. Therefore, those who were involved do not represent any sort of a random sample. Furthermore, the ones who agreed to be involved in this study had the longest duration of participation, which implies that they were significantly engaged. Out of the full roster of participants, some teens were only involved for one summer, though the majority spent at least one year in the program. There were a few instances where we allowed a younger (age 14-15) person to join, only to discover that they did not have the maturity needed to be an effective and contributing participant. Fortunately those times happened during summer sessions when it was easier to have one of the youth employment programs we partnered with reassign that person to a different job site.

During my interview by Kierra, I was asked to tell about particularly memorable events during the course of the program. As I told the story about our first screening at the Cinemopolis theater, which had a large turnout and a festive atmosphere, as well as a reception afterwards that featured Thai food made with local ingredients, I also had to relate how the evening ended.

> Then we had the after-party dance and of course that was memorable because here we are the adult volunteers totally exhausted from preparing for the screening and we are chaperoning a teen party where people are sneaking in alcohol and getting rowdy. Eventually a fight broke out and I went to break it up. I ended up getting sucker punched from behind on the side of my head. I grabbed that kid and put him in a chokehold. Then the crowd started pulling on me and it was total chaos. I remember Frisco and I grabbed one of the kids that was fighting and pushed him out the door. Then everyone spilled onto the street and was arguing. Of course right then a cop car was going by. Kids are spilling down the street towards Shortstop Deli and then tons more cops arrived and we then had to keep the peace and keep the cops from beating on the kids. Only one kid got arrested, and he was just stupid and punched another kid right in front of the cops.

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What had started out as a celebratory night ended on an unfortunate note. Thankfully no

one was seriously hurt and a standoff between police and a sizeable group of riled-up

teenagers, most of whom did not even come to the screening, was defused. However the

next day there was a short article in the Ithaca Journal that had no details about the

successful screening and community reception. It only mentioned that the fight had

broken out at an event hosted by STAMP's Green Guerrillas. Apparently there was

already an altercation happening a block away at the deli that the police were responding

to when our crowd came pouring out into the street. We had our first negative press and it

was from our very first newsworthy event. Over the years we had a few positive

interactions with and received some fair coverage from other media, but for the most part

we had a highly critical view of both mainstream and alternative media sources and

strived to tell our own story. Kierra asked me a question that prompted me to reflect on

that aspect of our experience.

> What was funny was our relationship with the media. Oftentimes people wanted
> to do stories on us but didn't want to work with us in a way that we were
> comfortable with, given our extensive knowledge of how the media can and
> cannot work to your advantage. We turned away several reporters who did not
> "come correct" [i.e. approach us with proper respect], and we saw how we were
> slighted in different ways by some press. For instance there was a report back
> [community dinner and presentation] from the USSF[33] at GIAC[34] one time a few
> months after that first trip to Detroit. A group of GIAC kids had also gone to the
> USSF, but it was clear from their presentation that a lot of it was over their heads
> and it was just another field trip to many of them. GGs gave a presentation about
> all the stuff we did for those 10 days we were in Detroit, which included giving
> multiple workshops and screenings at both the USSF and the Allied Media
> Conference, and having our bus on display at both. But when the story came out
> in the Ithaca Times, the GIAC kids were highlighted and GGs were given short
> shrift. Considering all that we had done there, for 10 days no less, with a full
> grasp of the political nature of the event, that story in the paper was a reminder of

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[33] United States Social Forum.
[34] Greater Ithaca Activities Center.

what we had always asserted — that we need to be our own storytellers as people of color with a special perspective on the holistic interconnection of issues.

From the early days of the program to the very end there were many challenges that tested our patience and ability to persevere. However, the enthusiasm the youth had for the group, as well as the successes they achieved collectively and in their individual lives, motivated us as the coordinators to maintain our commitment.

Overall, in my assessment, I do think that the program was successful in a number of areas, as evidenced by both the interviews quoted here and the large amount of positive and supportive feedback we received from family members of participants, educators, community leaders, and everyday people. The participants felt empowered by becoming active and having their voices heard in their local community and beyond at conferences, film festivals, and other gatherings like the Confluence. They were exposed to a plethora of information about social justice, sustainability in a variety of forms (green building, organic agriculture, renewable energy), and Indigenous worldviews through regular study of media materials and engagement with a wide variety of people and organizations representing those issues. They learned to think critically, make complex connections between different topics, and express their ideas effectively to others through public speaking and media production. While most of those interviewed have not taken up the banner of activism in their current lives, two have through their academic work in college, and the others do express concern about current affairs pertaining to the environment and social justice. Some continue to do media production as a hobby and spend time in nature for relaxation and rejuvenation. For myself, as a community-based educator, the most important outcome of the project was that the participants had a sense of accomplishment stemming from their work while becoming

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highly aware of the connections between social and environmental issues, particularly as they relate to their own lives as people of color and to other marginalized and oppressed groups.

Summary

From the standpoint of narrative research, what participants shared in their interviews was not always easy to categorize neatly as stories. Their responses to the interview questions were a mixture of feelings, impressions, reflections, and some short vignettes about their experiences in the program. However, as I categorized and combined their words with my own interview and underwent the process of organizing and writing this chapter, a polyvocal story emerged about the fundamental elements of the educational experience that was Green Guerrillas Youth Media Tech Collective. It makes no attempt at being a comprehensive analysis of the program, but rather seeks to highlight the essential aspects that speak to this study's focus on digital storytelling, environmental learning, and Indigenous ways of knowing. It is the story of a grassroots community organization, told through qualitative research, that took the interests and experiences of its co-founders and created a unique educational experience for a small group of teenagers that had a markedly positive influence on those who were involved. The GGs interviewed in this study told of vivid, and often precise, memories about their experiences in the program, even though what they were remembering had taken place anywhere from 3 to 8 years prior to the interview.

The overall learning environment and pedagogy of the program resonated strongly with participants and ignited a spark of engagement. In their estimation, having opportunities for self-directed, hands-on, and spontaneous learning was a refreshing

alternative to their formal education. The use of multimedia teaching tools and discussions in the group's "Political Education" sessions fostered critical consciousness about environmental and social issues. Participants found the dynamic and organically evolving curriculum to be a stimulating and effective approach for learning about the complexities and interconnectedness of social justice and sustainability, particularly as those issues related to their own life experiences. Though the program was structured around a guiding set of intentions, the youth found that it was responsive to their interests. They became motivated and self-directed in their learning on a variety of environmental and social topics, which they shared with a wider community through public speaking and digital storytelling. The interviews revealed a substantive and sustained sense of fulfillment and empowerment for them while doing this work. Other factors that emerged that influenced engagement with the program were the roles of food and interpersonal connections. There were many positive memories associated with the snacks in the office and the ethnic foods we would consume in our travels. An awareness of the importance of healthy food led to a sustained change in eating habits for some, while the field trips to community gardens, farms, and food deserts like Detroit fostered an awareness of food production, distribution, and access issues facing economically challenged communities. One of the most strongly expressed themes in all the interviews was the importance of interpersonal connections within the group. Youth participants and adult mentors alike expressed the value of sharing a positive and supportive group dynamic that led to a feeling of connection akin to family. One of the youth participants mentioned that the subject matter of the documentaries that we studied could be depressing. It was seen as highly beneficial to have the ability to explore critical social and environmental

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consciousness in a safe and supportive social learning environment facilitated by adults who were dedicated to their growth and well-being.

The participants related how digital storytelling served as an effective engagement point for the program's educational mission, as they found enjoyment and satisfaction in mastering the skills of digital media production. The sense of accomplishment felt by them and the community recognition they received for their work fostered feelings of empowerment, agency, and positive identity. By being able to contribute to community awareness and policy decisions in unique and creative ways that resulted in positive feedback, their views of themselves as storytellers and change agents were reinforced. The GGs discovered the power of communicating their ideas though digital storytelling and developed a strong sense of pride in the aesthetics and quality of their productions. The Ecocinema projects provided a unique learning opportunity for utilizing digital storytelling to explore nature. The participants noted how the activity fostered and developed an appreciation for nature and being outdoors, a new experience for most of them. They also expressed a sense of accomplishment in honing and enhancing their camera skills individually, while also participating in a collaborative artistic effort that combined the aesthetics of nature and digital media. Some of them enjoyed the relaxing benefits of spending time immersed in nature and still seek it out in their personal lives. It was also highlighted by one of the interviewees that Ecocinema existed in a dynamic relationship with the other activities of the group, including documentary video production, community organizing, and activism.

In addition to direct contact with nature and environmental issues through digital storytelling, the GGs' extensive exposure to Indigenous people and ways of knowing led

to higher consciousness and attitudes about their relationship to the environment. Several of them articulated feelings of a greater awareness of the spiritual connection of human beings to the natural world, as well as pressing issues of environmental injustice in Native communities. Their time spent with Indigenous elders, community leaders, and activists, as well as the presence of Indigenous people in the group, fostered opportunities for experiencing a worldview that influenced the group.

Green Guerrillas seems to have had a profound and positive effect on the participants' sense of self and identity. The development of a high level of environmental ethics was apparent as they articulated a strong sense of personal responsibility for the environment and future generations that was influenced by their exposure to Indigenous ways of knowing, environmental issues and practices (e.g. gardening, composting, recycling, and renewable energy), and direct contact with nature. Everyone's experiences in the program held a special personal meaning for them. They felt that it helped them to understand a variety of issues such as their identity as a person of color in a racist society and the mechanisms of injustice, as well as how to think critically, question the status quo, and empower themselves through digital storytelling and community engagement. All of the GGs touched on how the experiences and knowledge gained in the program gave them conceptual tools and communication skills that they were able to apply to their work, schooling, and personal lives, and that continued into the present. Many spoke to the significant influence that the program had on the development of their sense of self and agency. The story told about the empowerment, enjoyment, pride, and collective camaraderie associated with being a member of Green Guerrillas Youth Media Tech Collective, as a learning community that sought to chart a unique path in the field of

community-based education, speaks to the value of this study for practitioners and

researchers.

Chapter 5. Decolonial Digital Storytelling:
Emerging Indigenous Leaders Institute Case Study

Introduction

This chapter examines the impact of an indigenous knowledge-based curriculum with a digital storytelling component on the development of environmental awareness and stewardship among a group of young adult Native men and women who participated in a leadership training program. The structure and goals of the Emerging Indigenous Leaders Institute (EILI) were described in Chapter 3. Each of the three cohorts of 6-10 students met in monthly course meetings over the course of a year with some of a dozen visiting faculty members. Demographic data about the student participants whose videos were analyzed and who responded to my questionnaire are presented in Table 2. Many were college students at the time of their EILI training and some were parents.

As a visiting faculty member of EILI since its inception, I teach a digital storytelling workshop as the final part of the training for each cohort. Most of the students complete a capstone project — their own digital story based upon their lives and experiences in the program — under my instruction. Though it is not explicitly an environmental education project, EILI is a valuable site for this study as all of the students and staff are Indigenous and its curriculum is centered upon Indigenous ways of knowing, including a significant focus on environmental topics. The videos produced by the students highlight contemporary issues for them as individuals, as well as their communities. Many of these digital stories either focus directly on environmental topics or incorporate the environment and nature.

This chapter combines an autoethnographic narrative exposition, based upon my curriculum notes and recollections of my experiences teaching three cohorts of students,

with narrative analyses of a selection of the students' videos and excerpts of email interviews with those students. I watched each video several times while taking detailed notes to guide my analyses. It was not possible to do group or individual interviews with the students by internet video chat as I had originally intended due to a variety of unforeseen logistical issues that arose. In March of 2015 I utilized email correspondence to research the students' experiences in the course. I prepared a brief questionnaire of open-ended questions that focused on the key concepts from the research questions and distributed them to the EILI alumni who were willing to participate. I knew that all of them had busy schedules with work, school, and childrearing duties so I kept the questions tightly focused. As the text of their responses was much shorter than the oral interviews I conducted for the other sites in this study, I organized and coded them manually rather than using ATLAS.ti. After coding, excerpts were chosen to represent the variety of experiences and perspectives of the students. The excerpts quoted here are verbatim except for correction of typographical errors and a few bracketed insertions for clarity.

The mixed narrative employed here is intended to present a rich and diverse view of how the following research questions were answered within this learning community:

Research Questions

What were the experiences and perspectives of participants in programs that utilized a combination of digital storytelling and Indigenous ways of knowing to foster environmental learning?

- What aspects of these programs did participants find engaging and meaningful?
- How did hands-on learning experiences and mentoring interact with the digital storytelling aspects of these programs?

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- How do participants in these programs articulate their identities and sense of ethics in relation to the environment?

- What sense of empowerment did the participants gain?

Participants

The participants who gave interviews for this study are listed in Table 2.

Table 2. EILI Digital Storytelling Participants Interviewed.

Name	Age at interview	Age when in EILI	Gender	Nationality*
Patrick Burtt	29	27	male	Wa She Shu (Washoe)
Trisha Calabaza	33	27	female	Agai Dicutta (Walker River Paiute)/Toi Dicutta (Carson Sink Paiute)
Autumn Harry	22	20	female	Cui Ui Dicutta (Pyramid Lake Paiute)/Diné (Navajo)
Gene Harry, Jr.	26	19	male	Cui Ui Dicutta
Esha Hofferer	26	20	male	Agai Dicutta
Sara Twiss	25	19	female	Agai Dicutta

* The people referred to here as Paiute divided themselves into groups distinguished by their primary source of food. For example, ***cui ui*** refers to a fish of Pyramid Lake, ***agai*** to trout.

Digital Storytelling and Indigenous Ways of Knowing the Environment

First Cohort: 2008

In May of 2008 I traveled for the first time to the Pyramid Lake Paiute reservation

about an hour northeast of Reno, NV. It is a beautiful area of desert rangeland, rivers, and

lakes. The snow-capped Rocky Mountains loom large in the west; the daytime

temperatures reach the 80s and 90s at that time of year. The desert region is relieved by

the Carson River, Walker River, and the Truckee River, which begins in the mountains and terminates in Pyramid Lake within the reservation.

The first cohort of EILI students had gone through the program's course work over the previous months. The four-day workshop with me served as the culmination and capstone project of their experience. We worked in and around a home owned by the brother of the director of EILI. I taught basic videography skills, and we discussed the elements that make up a good story after watching a few examples from Green Guerrillas DVDs. To practice their skills, in a few hours they created a storyboard (sketches and notes for video elements) and a script, shot video footage, and edited a public service announcement. All of them had already shot footage or had collected the photos that would be used in their projects, but we also did some shooting on the shores of Pyramid Lake, both for practice and for use in their stories. I taught them the basics of editing on iMac computers as they worked with their own material.

Five students participated in the workshop, and three completed their videos. The other two had responsibilities that limited their participation. At the end of the last day, a small community screening of the videos was held for friends and family. The students clearly felt a strong sense of accomplishment, and their family and the community members present were very proud of them. All of the student videos were collected on a DVD and distributed.

One video told a story of resilience in the face of the traumas inflicted by colonization. Another focused on that student's experience as a mother carrying on her people's traditions regarding pregnancy, childbirth, and motherhood. The third focused entirely on an environmental topic — hunting — and the student's connection to his

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homelands and nature. This student was interviewed for my research; the others were not available. A description of this video and excerpts from the interview follow. The same format will be used for the other videos and interviews.

Moo'atupu Nawahana — Telling How It Was by Gene Harry, Jr.

The video begins with the title displayed over an opening shot of the sun over Pyramid Lake. This dissolves into a shot of a river as the camera pans to a hunter in camouflage on the edge of a bluff overlooking the water. The hunter is Gene, the maker of this story. This is a sacred place to him, he tells the camera. It is close to his ranch and the place where he first learned to hunt ducks. He talks about mud hen ducks and how they were captured with nets in the old days. The sequence cuts to him hunting from the bluff and then shooting two ducks with a shotgun. As he wades across the river and retrieves his birds he gives a loud victory cry. The screen returns to a close-up of Gene as he talks more about the old ways of hunting. He reinforces his understanding of the sacredness of this land and how it is essential habitat for fish, ducks, and geese, as the river feeds into the lake at this location. While in that lower area where they are filming there are few plants, he points out that there is an abundance of the plant they call Indian tea growing uphill from there. Gene talks about the fish spawning and the importance of learning the traditional ways of life.

The video cuts to a montage of old black-and-white photographs showing pine nut harvesting, a traditional dwelling, and a hunter with a bow and arrow. As images of the lake appear on the screen we hear Gene speak about the importance of staying healthy and fit. The image montage transitions into a shot of him preparing to clean the duck he has killed. He talks about hunting being akin to therapy and the importance of hunting

with respect and taking game "in a good way." According to him, if someone is feeling troubled they don't need to see a doctor or a therapist, they should just go outdoors and hunt and "get themselves centered." Seeing the mountains, being by the lake, riding a horse or a bike, any activity outside is "grounding," he says. As he plucks and guts the duck he says that some people might think it stinks, but to him it smells good and feels therapeutic. The story ends with a scene of waves lapping the shore of Pyramid Lake and an eagle flying along the bluffs.

Throughout the video is a soundtrack of Paiute songs. The message is clear about the importance of maintaining a connection and relationship with the land. The opening and closing shots situate this story firmly in the land the maker calls home. While Gene is hunting using modern methods, he shows respect for the traditional ways of his ancestors, both in his words and in the old photographs he shows. He sees the land and nature as providing not only food for subsistence, but also spiritual and emotional nurturance for his well-being. His digital story emphasizes the importance of maintaining a connection to one's homeland in a direct way. It reaffirms both the Indigenous paradigm of the significance of a deep rootedness to place and tradition, and the contemporary discourse in environmental education and related fields about the importance for people having direct contact with nature.

Gene relates his experience of learning digital storytelling:

Being able to interact with the technology gave us a new skill that may be applied in the future. The experience I had was great. I caught onto the computer and editing software pretty quick and was able to help others with their editing as well. In filming my story I got to involve others. I actually had someone filming for me. I was outdoors in my video and got to show one of the EILI instructors around my homelands. Jason taught us that digital storytelling can be utilized in many different ways to benefit Native and non-Native people alike. It can be used to educate children or to bring awareness to issues happening in your community.

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It's a good way [to] shed light on history and facts that are otherwise untaught or unheard of. It's also a good healthy way to interact with one another as peers, and you get to see your finished product.

His response contains many layers. He gained a sense of accomplishment from being proficient at editing, as well as completing a project that could be shared with others. The project gave him the opportunity to share a land-based activity with one of the visiting faculty members while being recorded hunting and speaking about the experience. He sees digital storytelling as both a valuable communications tool and a positive means of working together with the other EILI students.

Gene's description of his story highlights its focus on Indigenous ways of knowing, culturally based environmental ethics, and his personal connection to the land and his people's traditions.

My video was about hunting practices and some of the traditional foods that we eat. I was making a comparison on how my ancestors used to hunt without firearms and how we go about it today. I was also trying to portray that being active and outdoors is healthy for your mind, body and spirit. As Native people we should recognize our connection with Mother Earth. To not always take but to give back more. Recognizing the elements that we use to pray and ask for blessings for them as well. As Native peoples our relationship to the natural world should be held very close to our hearts.

Moo'atupu Nawahana — Telling How It Was relates a message of physical, emotional, and spiritual linkages between people and the land, as well as with their ancestors, that is vitally important to maintain. It is a textbook example of the use of digital media to tell a story about the maker's identity and sense of empowerment as it relates to Indigenous ways of knowing and the environment.

The audience Gene seems to be speaking to through his digital story is other young Native people, particularly from his own community. It is clear he wants others to find value and personal healing in time spent doing outdoor activities. While he doesn't

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address it explicitly, his community, like many reservations, struggles with social maladies such as alcoholism and drug addiction. Through his video he is advocating for a sober approach to life that is based on his cultural reference point. There is an underlying theme of empowerment conveyed by this story. He talks about the importance of Native people still being able to derive sustenance from the land, as well as the psychological and spiritual healing he derives from spending time outdoors. In addition to the benefits derived from contact with nature, he wants people to value their traditions and ways of knowing. This is apparent in his choice of Paiute songs for the soundtrack, rather than generic pan-Indian music such as powwow or flute songs, as well as the respectful way he speaks about ancestral hunting methods and the importance of maintaining a spiritual connection to the land. He highlights the importance of traditional foods such as duck, trout, and herbal tea being part of the Pyramid Lake Paiute identity. Visually, he chooses to show footage of the hunt from start to finish. The viewer is with him as he scouts on the bluff, shoots the geese, retrieves them, and finally plucks and guts them. He wants the audience to witness the whole process as viscerally as possible through the medium he is using. Obviously smell isn't one the senses that can be communicated through digital video, but he makes a point to talk about the smell of the duck as it is being gutted. The lake and its surroundings are significant bookending visual markers for Gene's piece that reinforce the significance of place to the story he is telling.

Reflection on Teaching First Cohort

I returned home from the first EILI workshop with a strong sense of accomplishment. I felt I had successfully adapted my experiences teaching video production skills to students at Cornell and the GGs to a new group of students. Although

I had extended periods of time to work with the former, I only had four days to accomplish a great deal of instruction at EILI. While I did feel some disappointment that not all of the EILI students were able to finish their videos while I was there, it was due to factors beyond my control. The director of the program felt that it was a success, as did the students who got to complete their digital stories and share them with their families, who were also pleased with the results.

A significant aspect of my experience while I was there, one that would have a lasting impact on an environmental education component of the program, related to food. When we would share meals together I would decline anything that had dairy in it, as well as store-bought meats. For over 20 years I have maintained a fairly strict diet for both health reasons and as a part of my personal decolonization practice. The only meat I will eat is wild game or organic. The staff and the students felt bad that I wasn't eating as much as everyone else due to the limited options, particularly in regard to meat. I told them I would be happy to eat some wild game if they had any. They quickly produced two whole geese, which were roasted and shared. I was very happy to have the rare treat (as I don't hunt geese myself), and that my hosts had provided a local Indigenous foodways solution.

As I reflected on the workshop I realized that some of the video production skills I shared with them were unnecessary for that context. One instance that was somewhat humorous stands out in my mind. I was showing the students how to properly wind up an audio cable that is used to connect a professional shotgun microphone to a camera. I often make a point to demonstrate it early on when I am teaching video skills, as it is very easy to do it wrong and end up with a tangle that won't lie flat. The director of EILI pointed

out to me during my demonstration that most of the students were experienced rodeo riders and cattle ropers who had to handle lassoes. It was a skill they were already intimately familiar with; in fact, Gene has the tip of one of his thumbs missing from a roping accident. So this group clearly didn't need the lesson that so many others that I've worked with have. Overall, the experience was beneficial to my growth as an educator as it was the first time I got to teach media production skills to a group comprised entirely of Indigenous students. I was given a glimpse of their culture and relationship to their local environment, as well as having the opportunity to be part of a curriculum that had an explicit decolonization agenda. This benefited my thought processes in regard to Indigenous ways of knowing and environmental learning. I was excited to return the following year and improve upon my teaching approach.

Second Cohort: 2009

This year EILI moved into a new, larger location near the reservation in a town called Fernlee. The curriculum for the digital storytelling workshop was similar to the first year, with a mixture of camera work and audio recording instruction, field shooting, and coaching in editing. We watched the videos from the previous year's cohort, as well as some new pieces from Green Guerrillas, and then had a discussion about the elements of a good story and Indigenous traditions of storytelling.

Most of the students had already shot footage with their own cameras that they intended to use or had interviewed EILI faculty during the courses with the program's own equipment. However, editing to achieve a polished product is still an intensive, time-consuming process. In addition to me, Debra Harry helped, as well as EILI staff assistant Le`a Kanehe, and Debra's mother, Charlotte Harry, a highly regarded elder and a fluent

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speaker and teacher of the Paiute language. We worked many hours each day with the students so that they would all have a completed digital story to screen for the graduation ceremony. Charlotte's language and cultural expertise was invaluable for the students, most of whom incorporated some Paiute language into their video. At graduation time the response from family and friends was very positive and encouraging to the students. All four students who participated in the workshop completed and screened their digital stories. They clearly felt a sense of empowerment and accomplishment.

Each of the four videos deals with a unique subject, but they all contain a thoughtful engagement with Indigenous ways of knowing, as well as a connection to environmental themes, either explicitly or implicitly. Three of the four students were interviewed for this study. What follows is a narrative analysis of their video stories along with excerpts from their interviews.

Esoo Nuga Namanakana Namayooana (This Is My Movie) by Esha Hoferer

This video begins with a shot of Esha introducing himself in Paiute, identifying who he is, who his parents are, and where he is from. A montage of still images shows him visiting Alcatraz Island, his high school graduation ceremony, his father (a respected cultural coordinator for the Walker River Paiute), other family members, and his reservation.

The soundtrack is a mixture of traditional Paiute songs as well as some hip hop by an artist from his community. A series of still images of construction of traditional dwellings transitions into a shot of Esha talking about what EILI has taught him about his people and traditions. This is followed by a series of interviews with several EILI faculty talking about the intergenerational process of Indigenous knowledge transmission, the

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similarity of different Indigenous peoples' views on the connection of human beings to the earth, and how homeland is central to identity.

Next we see Esha speaking in Paiute as the English translation scrolls across the screen:

> I am glad to be here today on Mother Earth. I am learning my people's way of life. My father was a strong Indigenous leader. He told me to help the people become *Numu* [people] again. I am here to today to tell you to learn these ways. Learn your language. Learn your songs. Pray for good water. Pray for the animals outside your house. I am here to be a leader of tomorrow. My people are strong. Leaders came and gave me good words to bring back to my people. Pray for the lakes; pray to the north; pray to the south; pray to the east; pray to the west.

Another montage of still images shows the land, his father, singers at a drum, Esha himself out in various landscapes, local petroglyphs, an Indian basketball game, a river, a lizard, EILI participants and faculty. This transitions into point-of-view footage moving slowly through the woods and pans of local landscapes. The story closes with a shot of a Native rapper at a concert on the reservation.

Esoo Nuga Namanakana Namayooana (This Is My Movie) is a concise and upbeat rendering of the maker's perspective on the importance of upholding his people's knowledge and traditions in his life. It incorporates language and music with images and video of knowledge holders, family, community life, and nature to paint a picture of Indigenous cultural vitality that remains rooted to a strong sense of place and renewed in the lives of young leaders. Esha described his movie as follows.

> It was a story about myself and what I've accomplished in my life at that time. I was still in school, working towards my degree. I was in a beautiful relationship whom I now have kids, and both have our degrees. The video speaks in volume to where we all can have a story told to a small audience or to the world.

He makes a positive association made between his autobiographical project and other elements of his life at that time. He also notes the importance of people being able to

share their experiences through digital storytelling. The sincerity of his desire to maintain a positive life that is grounded in his culture comes through clearly in this story.

Esha also spoke fondly about the process of learning media production skills in the digital storytelling workshop:

> I've have always been around technology since I could remember. I love the aspect of using digital media to tell our own story, for others to better understand our way of life. I've always been a fan of video editing. I've had countless hours filming and editing. For Jason to come into the course, he gave it more structured approach to the film making process for me, because I was more of a trial and error type of person. His lessons on the storyboard, the angle shots, to lighting, to everything you need to know about filming, Jason has touched base on all of that. I'm more open minded on what I do behind the lens, and also making a video. I know what Jason has taught will benefit our future generations.

Esha already had a strong interest in video making before becoming an EILI student. He felt the digital storytelling component of the program enhanced his skill set. Being able to tell a story that can reach others and educate them is clearly important to him. He sees digital storytelling as having a beneficial impact on coming generations through the documentation of Indigenous ways of knowing and life experiences, just as it has for himself.

Esha's story is an expression of his sense of empowerment. His audience is his peers and family first and foremost, but he also expresses in his description of it the value in reaching a larger global audience. In his own assessment and my analysis of the narrative, it is an affirmation of his life's journey through formal education and learning his peoples' cultural knowledge. While images of the land and his reservation are peppered throughout the story, the opening image and words are from him, and it his personal story that is foregrounded. The interviews he selected of EILI faculty support his themes of intergenerational learning, which connects to his family, particularly his father,

and the importance of their land, which is central to his identity. The footage of local petroglyphs (which some archeologists have stated are the oldest in North America) as well as a hip hop performer help frame that identity as one that is rooted in the ancient, but is also adapting to the modern. His story of himself in his interview establishes that he is a "digital native" who has long had an interest in using digital media. He describes his participation in the digital storytelling workshop as being positive for honing his skills in this area. Taken as a whole, Esha's digital story is an expression of a culturally based environmental identity. The foundation upon which he has charted his own life path is the combination of family, culture, language, and land.

Tamme Numuyadooa! Let's Speak the Language! by Trisha Calabaza

The opening shot is from one of the practice shoots we did in the workshop. Two EILI students, Esha and Sara, are walking along a sidewalk, when they meet another one, Kaiulani. She speaks to them in Paiute and they look perplexed. She shakes her head and walks away as one asks the other, "What did she say?"

The question *Why are we losing our language?* appears on the screen. Next, an interview with Pyramid Lake Paiute elder Ralph Burns shows him talking about language loss, particularly the effect of boarding schools where Native children were forced to learn English. This moves into an interview with language teacher Lois Kane, who speaks on how life was for Native people before the boarding schools, when language and culture were a normal part of family life, and how those schools disrupted the family connections of the children who were forced to attend them. A montage of archival black and white images shows Native people making basketry and other traditional activities.

The video returns to Ralph talking about how the influence of churches and missionaries also accelerated language loss. Over a montage of images of language classes, Lois speaks about how formal instruction has supplanted learning at home. Ralph then talks about how the Truckee River diversion in the early 1900s made the lake level drop, preventing the cui-ui fish from migrating and destroying the fishery the people relied on. Then the Army Corps of Engineers straightened the river and destroyed the trees along it. He says that the fish lost their instincts due to the dramatic changes in the ecosystem and compares his people to the fish. The cui-ui fish that literally defines who they are (that is, the traditional name for that band of Paiute is Cui Ui Dicutta, "cui-ui eaters") is on the Endangered Species List, and the Paiute language is endangered too. He states that if the fish go away, then the people will be gone too. The closing credits scroll over an image of a lake shoreline while a song sung by Gayle Hansen in the Paiute language plays in the background.

Trisha's story makes a compelling case for the importance and interrelatedness of language, culture, and environment. She offered a summary of her story:

> My video was about the loss of our native languages. For me it speaks volumes because we are losing our language very quickly, and if we do not do something about it, it soon will be lost. I tried to show that some of the younger generations have no interest in learning the language. I then tried to show why it is important that we try to revitalize it, by our elders speaking about why it is important. I remember an elder I interviewed told a story about when the fish stop coming up stream that is a sign that our language and culture will be lost. It is a perfect example of how our elders have knowledge from the natural world and try to use the knowledge to teach our youth today.

Trisha obviously recognizes the importance of the Indigenous ways of knowing that her elders embody. She sees that there is deep value embedded in their language — that it is

the essence of their culture and reflects the relationship between people and the

ecosystem that sustains them.

Working on this project was a highlight of the EILI curriculum for Trisha. She

shared with me her reflection on the digital storytelling workshop:

> I enjoyed that portion the most. I have always had an interest in photography and
> film. What I remember most is learning how to edit the video we shot, because
> that was very fun putting everything together and making something for everyone
> to see.

Trisha valued the creative process as well as video's ability to serve as a vehicle to share

a story for others to appreciate. Due to her work commitments she had less time to edit

than the other students, but she worked hard and succeeded in finishing her project. Her

story highlights the importance of language preservation for her people while also

making a significant statement about the relationship between them and their

environment. Like Esha's story, Trisha's video highlights the interrelation between social

and environmental factors in the construction of Indigenous identity.

Her intended audience seems to be others in her community, particularly the

youth. She clearly wants to emphasize the urgency of language retention to them. The

opening segment of her story, featuring EILI students acting out a scene where two of

them don't know the language, is one that she helped craft. It served as both an exercise

in digital media production skills and an opportunity for her to illustrate the situation that

is taking place with Native youth and language loss. Her story also contains a strong

indictment of the colonialism and missionaries that sought to erase Native languages,

which speaks to the focus on decolonization in the EILI program. Like Esha, Trisha

already had an interest in visual media, which facilitated her enthusiasm for the digital

storytelling workshop.

Agai Panunadu[35] by Sara Twiss

This video opens with the sounds of a woman singing a traditional Paiute song and a panoramic shot of Walker Lake. Sara introduces herself in Paiute while standing at the edge of the lake. Shown next are old black-and-white photographs of her people fishing that transition into images of the lake and statistics about it, while she speaks in a voiceover about how her ancestors once thrived on the abundant fish (particularly Lahontan cutthroat trout), noting the devastating lake level drop in the past century (a 75% loss in volume) due to agriculture upstream. She talks about the lake's threatened fish species and its ecological importance as it plays host to the largest gathering of common loons west of the Mississippi. Loons and pelicans are shown flying gracefully over the water. She states that if the lake continues to drop, the fish will all die. If the fish die then the loons and pelicans will suffer tremendously, as the US Fish and Wildlife Service already lists them as sensitive species.

As a view of the reservation is shown, she asks "Why is Walker Lake important to you as a young member of the Walker River Paiute Tribe?" Esha Hofferer responds, speaking about their creation story that situates them in their homelands. As he touches on the importance of the lake and the sacred mountain there to them, still images of the lake, the mountain, and a group of women in powwow regalia dancing on the edge of the lake are shown. He states that if the lake is gone, then they will be too, as it is one of the main sources of who they are. Esha relates how Wovoka (a famous Paiute prophet who was responsible for the Ghost Dance movement in the late 1800s) held ceremonies there, while a photograph of him and images of petroglyphs are shown. The story closes with

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[35] "Trout Lake" in the Paiute language. Commonly known today as Walker Lake.

footage of local plants and a river that feeds the lake, as Esha speaks about how important

it is for them, as leaders for their community, to cherish and protect the lake for their

children and grandchildren.

This video carries an unambiguous environmental message that highlights the

interconnection of the Walker River Paiute and the lake that has always sustained them.

The imagery and music show continuity between past generations and present. The

soundtrack features a well known Paiute singer, Judy Trejo, performing traditional songs,

a widely popular powwow drum group called Northern Cree, and a Native hip hop group

called Savage Family that is popular with young people. Sara felt it was important for the

video to convey a strong message:

> I wanted the video to focus on why the lake was such an important aspect of our
> culture. To me, a lot of adults and youth do not understand the reasons why the
> lake is diminishing, and I was able to tell a story about the lake while also
> explaining how there's a long history of why the lake levels were decreasing. I
> connected how the lake was going down and why the TDS [total dissolved solids]
> levels were increasing, causing the trout to no longer be able to survive in the lake.
> Not only the trout are suffering but other fish, birds, mammals, and plants are
> diminishing because the lake is their main source of water. I explained how water
> is such an important resource because it provides all of these things life and has
> sustained them since time immemorial. My video highlighted in the end how we
> need to educate ourselves on what is important to our tribe because it's what
> keeps our culture alive today.

This digital storytelling project gave Sara the opportunity to explore a pressing

environmental issue right in her community through the lens of their Indigenous ways of

knowing while also offering scientific data about the lake. She felt compelled to create a

story that would draw attention to this topic as she had worked for the Walker River

Paiute Tribe's Water Resources Department. Indeed, the relationship of her people to the

land and water where they live serves as the very foundation of their culture and identity.

Learning digital storytelling empowered Sara and, in her estimation, provided a unique learning opportunity for her.

> Using digital media tools I learned that I needed to step out of my comfort zone and speak with Indigenous elders and youth in order to work together and learn from each other in order to preserve our culture. I remember working with a group of fellow EILI members and we interviewed several EILI instructors about their views and understandings of colonization and decolonization. We learned how to ask the right questions in order for people to open up to us on camera, and not end up with a closed conversation. I think this created a closer connection to our instructors because they weren't only speaking about scholarly examples, but they'd talk about their own personal experiences. I remember also recording Andy and Bea Allen, who are elders of my tribe, and they were telling traditional stories and creation stories of the people that was passed onto them by their ancestors. Having all of these traditional knowledge and stories on digital media is the number one way to preserve our language and culture. Using digital media tools in the EILI course, I was able to tell my own story about my people while sharing both traditional and contemporary relationships with the natural environment and my tribe.

Sara's interview speaks to the value of digital storytelling as a pedagogical practice when working with Indigenous ways of knowing. She sees it as a valuable tool for the archiving and preservation of language and traditional knowledge, which in many communities is threatened as the population of language-proficient and knowledgeable elders dwindles.

While Sara's digital story shares some similarities with Trisha's in the highlighting of the interconnection of environment, language, and identity, its emphasis is on the environmental aspects. Footage of Walker Lake, a sacred mountain, and the local flora and fauna comprise many of the images shown. Given her background in environmental conservation work, this isn't surprising. Her voiceover and the interview with her partner Esha foreground the importance of protecting their land and water for current and future generations. The audience she is speaking to are other Walker River Paiute. In her interview she states that both young people and adults in her community do

not have enough awareness about what is going on with Walker Lake and the environmental issues taking place there.

It is worth mentioning another video created by a student in this cohort, one who did not participate directly in this study, as it also carries a very strong environmental message. *Tamme Pea Teepu Mabetsea* by Kaliluani Harry combines scenic outdoor footage, interviews with EILI students and faculty, archival images, and found footage of widely known Native elders such as Floyd Red Crow Westerman (Dakota) and Oren Lyons (Seneca) speaking about environmental issues to paint a picture of how serious environmental threats are to Native communities and the world at large. It also features EILI elder Charlotte Harry talking about the Truckee River and the negative impacts on their traditional way of life due to environmental degradation.

Reflection on Teaching Second Cohort

With this cohort of students I was better prepared for how to negotiate the time limitations of a four-day workshop. It was satisfying to me that all of the participants were able to complete their videos. They were extremely dedicated to their projects, and together we put in long workdays to ensure that there was sufficient time given to both media production skill development and editing. The atmosphere was both serious and light at times, with all of us (EILI staff, students, the elder Charlotte Harry, and I) enjoying ourselves and feeling a sense of accomplishment and fulfillment. There were no major issues that came up other than students sometimes feeling like they were hitting technical and creative roadblocks in the editing process. However, through intensive one-on-one instruction, I was able to help them to push through the obstacles so that their projects were completed in time for the screening at the graduation ceremony.

The foods that were served while I was there included more organic and non-GMO ingredients, as well as some traditional dishes. The EILI curriculum touches on issues relating to genetic exploitation and GMOs, as the director has worked for many years on issues of biocolonialism. However, it was now being taken a step further by an increased attention to the meals served during the course. It was clear that my dietary practices had been an influence, as the staff would ask me what I thought about certain products that they had stocked in the kitchen. I enjoyed talking to people about food and learning about their traditional cuisine. On reflection I can see how this is an important part of environmental education practice. Food is one of the most tangible ways we connect to the natural world. Even if people are disconnected from the source of their food, that in itself provides an opportunity for discussion about the environmental issues related to food production and consumption.

Third Cohort: 2012-2013

For this cohort the EILI curriculum was expanded and the courses were given over a longer period of time. I held my digital storytelling workshop in two sessions in January and May of 2013. This made it possible to train the participants in camera skills before they started shooting their footage and then separately help them through the editing process. In the first session we practiced our skills in the classroom and outside (in a yard). The location was a home just outside of Reno. The students had an Indigenous and healthy foods cooking challenge activity that gave them the opportunity to take turns recording a high-energy and dynamically moving event. We also watched examples of Indigenous digital storytelling, including the music video for a song by Ta'Kaiya Blaney (Sliammon First Nation) that carries a powerful environmental message

both in the song and in the video imagery. In the second session we focused intently on editing, using a media laboratory at the University of Nevada in Reno. The projects were more involved and longer than those of the previous cohorts, and most remained unfinished when it was time for me to leave. All of them had made substantial progress and felt confident in their editing skills so that they were able to complete the remaining work after I had left. The graduation ceremony and screening took place a few weeks later.

Summaries of the videos and interviews follow.

Pesa Nadayadu Poenabe Madabwe — Making Good Strong Leaders by Patrick Burtt, Cody Harry, and Sara Twiss

This is a longer collaborative piece between EILI alumni (Cody and Sara) and a new student (Patrick) that gives an overview of the EILI program. It begins with Sara speaking in the Paiute language and a black screen. The opening title sequence shows footage of a gathering of students and faculty smudging themselves with sage as Native flute music plays in the background. *Poenabe* is defined on screen as "One who speaks for the people and the rest of the natural world." The first segment of the video features interviews with EILI staff and faculty. Images of EILI course activities are interspersed throughout. Debra Harry, EILI executive director, introduces herself in Paiute and speaks about EILI being founded in 2008. Next Donna Goodleaf introduces herself as a Mohawk and the program director of EILI. Guest faculty member Brian "Mike" Myers (Seneca) says that EILI is the only program in North America that is culturally grounded, looks critically at the forces and impacts of colonization, and then thinks through how to heal oneself and one's own communities. Misty Benner, a student in the first cohort and

instructor for the second, speaks about challenging oppression and maintaining cultural lifeways.

Donna highlights that EILI curriculum is Indigenous centered and culturally based, providing students with a new level of learning that is not only fun but enriching. It validates who they are and equips them with essential skills in areas such as self-understanding, language, critical analysis of the history of colonization, and decolonization, while encouraging a passion to have a positive community impact. Debra then speaks about how the curriculum deals with Indigenous rights in domestic and international spheres, as well as the future impact that EILI graduates will have. Donna critiques western public education as a tool of assimilation in the way that it indoctrinates students into that knowledge and not their own cultural knowledge, language, and history. The visuals during this segment include images of non-Native students doing culturally appropriative and mocking activities in classrooms, as is typical around the Thanksgiving holiday. Many images show Paiute children before and after boarding school. Mike talks about the history since 1492 of genocide and how if you don't know history you will participate in your own demise. Debra talks about how the coursework deals with developing sustainable homes, families, and communities; about issues of energy usage and renewable energy, community organizations such as nonprofits, co-ops, and small businesses development; and wellness and health issues such as the threat of GMOs. This segment ends with Charlotte Harry speaking about how great it has been to have language revitalization be a part of EILI.

The next section of the video consists of student interviews. Trisha Calabaza from the Reno–Sparks Indian Colony talks about how she gained cultural confidence and about

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how she became more involved with her community after being in EILI. Dexter Quintero

talks about how the program strengthened his sense of identity as well as his sense of life

purpose. Then Misty Benner speaks on the ripple effect that comes from people doing

good things. The video winds down with Debra talking about the internships and

practical experiences for the students, such as going to the UN as a delegation to

participate in the United Nations Permanent Forum on Indigenous Issues. A montage of

images of all the EILI cohorts is shown as the video closes and Debra offers a final

thought about the importance of transformative leadership and putting knowledge into

action for the good of communities.

Overall, the video gives a solid explanation of what EILI is about from the

perspectives of staff, instructors, and students. The pacing is good and does not rush nor

plod. While some more lively and dramatic music on the soundtrack could have helped

increase the energy of it, the use of flute music definitely signifies it as having a Native

theme. The process of creating the piece collaboratively was novel, as projects previously

had been primarily individual efforts. Patrick found the instruction in digital storytelling

skills and tools to be very helpful for him:

> With various learning styles within an educational setting, the use of digital media
> tools within EILI created a bridge for me specifically. The processes and
> protocols involved with not only a preservation of Indigenous knowledge (stories,
> songs, language), but also a continuation of those traditions have become
> available to Native Nations. I feel that with the utilization of the contemporary
> tools fused with traditional knowledge and an active engagement by community
> members, traditional knowledge is attainable/sustainable. Jason's workshop was
> extremely thought provoking, in terms of his emphasis on having an appropriate
> protocol for approaching individuals for my specific video. Jason asserted that
> with Indigenous Peoples, you must consider one's status within a society, i.e.
> elders, youth, spiritual position.

The teachings about being mindful of traditional cultural protocols and specific issues that might arise with different groups when working on a video in an Indigenous context were helpful for Patrick. The project he worked on was primarily "talking heads" in many interviews. Also, digital media as an educational tool resonated strongly with him, both for his own learning process style and as a useful engagement point with traditional knowledge.

The audience for this piece is broader than those of the pieces created by the previous cohorts. It is clearly intended to reach everyone from funders, to other Native educators, potential future students, and even the non-Native public. The structure and aesthetic feels like a conventional documentary with an explanation of what EILI is about. The footage is primarily "talking heads" interviews that describe various aspects of the group's pedagogy and its significance. It outlines the various elements of the program that were presented in the description (Chapter 3). As a narrative, it provides the viewer a story comprised of snapshots of the undergirding educational philosophy, activities, and impacts on participants.

Living Proof, by Autumn Harry

The video begins with self-recorded footage of Autumn introducing herself in English. A Diné song comes on as the camera pans across a moonlit Pyramid Lake. Autumn speaks about being both Numu[36] and Diné and names her clans. Crisp and picturesque footage shows landscapes around the lake. She tells about growing up at both Pyramid Lake and the Navajo Nation in Arizona and witnessing the day-to-day struggles of her people with alcoholism, substance abuse, domestic violence, suicide, and poor

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[36] Paiute for an Indigenous person of that area.

health — when the peoples had once lived sustainably. In her 20 years of life she's never touched alcohol, used drugs, or smoked, and this video is her story of sober living. Her life is her living proof, she says, as the *Living Proof* title scrolls across the screen with the pyramid-shaped rock the lake is named for in the background.

She talks about her upbringing as a shot of her as a small child holding a baby lamb is shown. Her parents taught her to respect plants and animals and to pursue an education. She learned about the beauty of the outdoors and the importance of maintaining a connection to the land. There is no other place she loves more than Pyramid Lake, as it feels like home and provides stress relief. Footage of a flying eagle transitions into the sun setting behind a hill, silhouetting some flowers. Autumn's voice says that the place offers much beauty, but only a few truly appreciate it. Over footage of her and her dog together she talks about the sacredness of water, how Mother Earth has always taken care of humans, and that people would be nothing without her.

The video dissolves into a shot of the sun from the vantage point of a car driving over the Golden Gate Bridge. She states that even though home is great, traveling and seeing what the world has to offer is good too. While the camera pans over the city she talks about how she loves San Francisco and its diversity, as it is a world that is very different from her home. A shot from a concert transitions to a beach with the ocean rolling in and Autumn climbing up some rocks. Every person has a different story to tell, she says. Things haven't always been easy for her. People who were supposed to be friends have tried to negatively influence her. It is important to surround oneself with positive people who will push you to succeed. She closes the story saying she will be able to look back happily on her life because she has embraced life.

Overall the video has an honest charm to it while concisely relating Autumn's desire to maintain a healthy and positive life as a young Native person. The story situates her in the context of her parents and family, their communities, and the serious challenges facing them. Her connection to the land is a source of strength and spiritual reflection. Having a deep connection to Pyramid Lake gives her a home base, but she also finds value in going out into the wider world and having positive sober experiences. The video imagery is of very high quality and shows an eye for the aesthetics of nature. Autumn shared her experience with digital storytelling in her interview.

> Autumn: I enjoyed working on my video because it gave me the opportunity to apply my creativity. Jason's workshop taught us about the qualities of a good story. These qualities include using factual evidence, personal input, a conclusion, and sharing stories that others can relate to. This workshop provided a gateway for future storytelling opportunities. We now have the tools to develop educational videos for further communication.

In addition to finding it enjoyable, she felt the workshop opened a door for further storytelling. Like the other EILI alumni who were interviewed, she saw that the skills she had gained would be beneficial for educational purposes.

Living Proof's use of a significant amount of nature footage shows Autumn's sensitivity to the importance of the natural world. Her narration also speaks to the environmental ethics instilled in her by her parents and highlights the importance of having a connection to the land for her personally. An implicit connection is made between leading a sober life and being able to appreciate the beauty of nature and tradition. Her identity is deeply rooted in land and family, and in maintaining a healthy lifestyle. This story is a very personal one and seems geared for an audience of peers and family. During her process of editing it, she was cautioned to avoid being "preachy" with her message or coming across in a way that others would perceive as haughty. It was a

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fine line for her to navigate so that she could express herself and, she hoped, inspire others to lead a positive and sober life, while not seeming to show herself as better than anyone else. This can be a concern in communities that experience significant social stressors that manifest in dysfunctional behaviors. Though the piece is quite short, it manages to convey a simple autobiographical story about a young Native person who derives strength from connecting with the environment that enables them to resist falling prey to negative influences.

Though I was unable to interview the makers, two other projects from this cohort should be noted, as they both focus on environmental subjects through the lens of Indigenous ways of knowing. *Generative Gardens for Generations — Decolonizing Our Indigenous Food Systems* by Miles Harry features an interview with faculty member Waziyawatin (Dakota) talking about the changes in her peoples' diet due to colonization. Prior to that people followed natural cycles — they planted corn, beans, and squash and other crops, also harvested wild rice and maple syrup, foraged for nuts and berries, and hunted bison. She asserts that at one time her people were some of the healthiest on the planet. Then the video presents diabetes and obesity statistics for Native people and makes the argument that colonized diets are killing people. The story next shows a sequence on urban gardens in Reno, NV and Oakland, CA that are cultivated by Indigenous people. As Miles narrates, during a montage of still images and video scenes from these gardens, he makes a case for the benefits of gardening for people to gain control of their diets so children can grow healthy, keep money in the community instead of in the hands of corporations, and reintegrate traditional foods in their diets. The piece ends with footage of EILI students preparing an organic and non-GMO meal.

E Natunetooepu E Tunetooekwu by Jordan Harry embodies Paiute ways of knowing of the environment and the contemporary environmental challenges facing the community. Its visual imagery is all centered on Pyramid Lake and the surrounding environment. It begins with a traditional song performed by Gene Harry, Jr., and is narrated entirely in Paiute. First Charlotte (the storyteller's grandmother) speaks about the ancient connection between their people and the cui-ui fish, so much so that their band name means "cui-ui eaters." Jordan then speaks in depth about his relationship with Mother Earth and his responsibility to be a caretaker for the land. He relates a story about heading out from his grandmother's to go for a walk along the river. There wasn't much water upstream and the cui-ui were getting stuck and dying and were unable to lay their eggs in the mud to spawn. Old black and white images of Indians fishing on the lake appear as Charlotte starts speaking: *This is a sacred lake and we pray over the water and we pray with the water. Spring time the cui-ui is abundant. This is what the people liked to eat a lot of. They ate it fresh and dried. When the cui-ui is available the ladies sat on the beach to clean them and take them home. Now there is not much water in the river. The cui-ui cannot lay their eggs in the mud. From the water the cui-ui jump on to the rocks and they die.* The video ends with a shot of the dam on the river and then fades to black with the text "To be continued. . . ."

Reflection on Teaching Third Cohort

It was exciting for me to see just how much attention was being paid to food this time. In addition to the kitchen being stocked with foods that I would normally eat at home there was an Indigenous foods cooking challenge activity, and one of the students made a digital story about community gardens and decolonizing one's diet. Having the

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opportunity to work with the students in two separate workshops allowed them to achieve a higher level of production value for their stories, as I was able to teach them skills and perspectives on storytelling before they began to acquire their footage. The additional time also allowed for me to spend a morning with them doing exercise. They had incorporated that into the curriculum, and it happened that the person who normally came to lead them in that activity wasn't available at the time of my first workshop with them. I enjoy physical fitness and had made it a part of Saturday morning activities with the GGs. It felt good to start the day with the EILI students doing some basic calisthenics and bodyweight exercises that don't require any equipment. Having the second session dedicated solely to editing was also beneficial to the students being able to achieve a high standard with their finished projects. The only drawback to the new format was that we were editing in a lab at a university, rather than on computers at the EILI house. We couldn't work quite as long each day, and dealing with feeding everyone required motr complex logistics that the staff had to handle.

Digital Media and Indigenous Knowledge: Potential and Problems

The EILI alumni expressed thoughtful perspectives on the intersection of digital media tools and Indigenous knowledge in their interviews. Most of them had favorable attitudes about the use of digital media for educational purposes, accompanied by a sophisticated awareness and understanding of the problematic issues that can arise from their use.

> Autumn: Through utilization of digital media, we are retaining Indigenous knowledge by recording stories and making those stories accessible to current and future generations. As Indigenous Peoples, most of our culture is based on oral history, but with recent technology, we can develop ways to preserve our culture through storytelling. This process allows us to share information to a widespread

audience while also promoting the use of digital media. It is a great tool to use, especially when combined with the use of social media.

Gene: One thing that the digital tools is very complementary to is education and the preservation of our languages and cultures. As long as people are not recording audio or video at or inside ceremonies I think digital media tools are very useful in teaching or preserving our Indigenous knowledge.

Autumn and Gene's statements are representative of the general sentiment toward digital media of the EILI alumni who were interviewed. They see a great value in using it for educational purposes, but there are also some important cautions and caveats to take into consideration. The use of recording devices of any type at ceremonies is completely forbidden by most Indigenous peoples of North America. Esha stressed having the wisdom to know when its use is appropriate for Indigenous peoples.

Esha: To me, it has been kind of a balance to where and when. I know there's a time and place to have these tools or technology out to help share with the world. It's hard at times when we as people need to step away from technology and really look at the world with your eyes, and not through someone else's. I always have to remember who I am, and who I represent when I am on social media, and when I do any video interviews. There is a time and a place for everything.

He feels careful thought needs to take place in regards to the responsible use of media technology. While he personally enjoys creating videos, as noted previously in this chapter, he also realizes that at certain times it will be an appropriate tool to utilize and at other times it won't be.

Other EILI alumni noted the complexities of this media format as it holds great potential for the documentation of language, stories, and other aspects of culture while also carrying potential issues around intellectual property and the maintenance of personal relationships.

Patrick: With Indigenous Peoples in a continuous struggle to reaffirm and maintain their traditional life ways, I think that digital media tools can be a great boon to those efforts. Also, I do recognize the ongoing appropriation of

Indigenous knowledge so in order to utilize these digital tools, I think that Indigenous Peoples must be conscious of the outcome of their digital works and become versed in the legal aspects of the use of digital tools.

As the EILI curriculum includes examination of issues of biopiracy and biocolonialism

— the theft and patenting of Indigenous genetics and traditional ecological knowledge by

Western institutions — it is unsurprising that Patrick is conscious of potential issues of

appropriation that must be navigated by Indigenous media makers.

> Trisha: I feel that it is important to be able to use modern digital media to record, archive and share our cultural knowledge, whether it is our language or customs because not many people have this knowledge, and soon the people that do have this precious gift will no longer be around to share this knowledge with us. But, most elders will refuse to be recorded in any way shape or form. There is this fear of being "dissected" or "examined" again by universities, or other learning institutions that wish to learn more about Indigenous Culture. I have heard some people voice their opinions on why we shouldn't share our knowledge with the world. Both are very good arguments. We need to figure out some way to please both sides.

Her comment highlights the diversity of opinion existing in Native communities

regarding the documentation of Indigenous knowledge. Young leaders like the EILI

alumni are tuned in to a high level of cultural sensitivity and respect for elders, as well as

the value of using digital media to promote environmental awareness, language, and

cultural knowledge; therefore, they are acutely aware of the contradictions that must be

negotiated.

> Sara: I practice and use digital media to preserve my Paiute language for myself and for my children. I have videos of elders telling stories and singing round-dance songs, and I'd listen to them on repeat so I'd learn from them. This way I am able to learn even when some elders have passed away; I will always have their stories and words in digital form. On the other hand, I think the use of digital media can draw youth even further away from real one-on-one time with our elders and those who carry traditional knowledge. . . . Literally being together, sharing stories, games, languages, and other teachings is what we did long ago. Nowadays I think with social media and digital media we don't have to leave our houses to be with one another to learn about some of our culture, but we need to

be reminded that being together as native people is what has always held us together.

Sara's response sums up one of the main complications of digital media use for furthering Indigenous knowledge and ways of knowing. It is a valuable tool for documentation, as she notes from her own personal experience, yet it is potentially problematic if it replaces real human interaction, which is at the core of the epistemologies and pedagogies of many Indigenous peoples. Overall, every one of the EILI alumni interviewed demonstrated an understanding of the positive potential uses of digital media technology, as well as the problematic aspects that need to be thought through and addressed for these tools to be of the most beneficial use for the purposes of furthering Indigenous ways of knowing.

Engaged Learning

The EILI course provided a unique learning environment for the students. Though they all came into the program with varying degrees of experience and familiarity with Indigenous ways of knowing from their cultural backgrounds, they got to explore a rich curriculum that provided many benefits. For some there was the practical aspect that the program was able to offer college credits.

> Sara: I was a freshman in college at the time and while attending the 6-month EILI program I was able to earn college credits. This was such an eye-opening experience as I was learning from an Indigenous-centered education that focused on my own roots.
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> Esha: I knew most of the course, but it was never taught in a classroom. The classroom aspect put it all together to where I can utilize it in towards my degree in college.

Sara and Esha both felt that the program offered a chance to engage with Indigenous ways of knowing in a format that was new to them, and was also a means to assist their

formal education. For Sara, the fact that it was an education deeply rooted in her own

Paiute cultural background was enlightening. Esha, who came into the program with

extensive experience with elders and other knowledge holders, found the formal structure

of EILI to be a new and enriching experience.

For many students, the desire to learn about their own heritage, as well as issues

facing Indigenous people at large due to the effects of colonization, motivated them to

join the program.

> Gene: I got involved because I was interested in learning more about my culture and also other cultural systems from across North America. Also I was very interested in learning about forms of government and law and how they affect Native peoples.

> Patrick: The EILI program provided the cohort with an over-arching curriculum that focused on specific aspects of Indigenous knowledge. One specific theme that I have taken advantage of is the whole theory of decolonizing one's self, not pertaining to knowing the processes of decolonization but engaging in those processes.

Gene's desires to learn how governmental policies impact Indigenous people is also a

crucial component of decolonization. Federal Indian law has a significant impact on the

lives of Native peoples, whether they live on or off reservations. Patrick found value in

the fact that the program has given him the ability to actively work on decolonizing

himself rather than just having an intellectual awareness of it. The EILI curriculum

provides a means for students to understand the multiple layers and lasting effects of

colonization on their communities, while also providing practical steps for them to

engage in decolonization actions.

> Sara: One significant experience in EILI that changed how I viewed the world was learning about the historical trauma that happened while my great-great grandparents were being forced into boarding schools. This made me realize how these events had caused harmful trauma to my people and how it is affecting not only their generation but the generations to this day. The *Numu* [people]

experienced loss of traditional practices, language, traditional diets, games, stories, and self-identities, and connecting these to issues we face today such as domestic violence, alcoholism, mental and physical abuse really struck a nerve with me because it was the first time I could see why things were happening the way they were within my own community. I've had multiple realizations about how my personal life was living within a colonized mindset because of historical trauma. Learning about this I was able to rekindle my own spirit and really focus on what responsibilities I had to myself, my family, and my community.

EILI held a special significance for Sara as it helped her to grasp the dynamics of abuse and dysfunction taking place around her and the effects of colonization on her own life, while also providing her the means to address it. She found empowerment through the program that led to her being better equipped to assist others around her through her fulfillment of responsibilities, a true mark of Indigenous leadership.

Other students also found the support they needed to believe in their own capability as future leaders. This is a key element of the program that empowers them to think critically and take action to improve themselves and their communities.

> Trisha: I think the whole aspect of being a leader in your community was significant to me. The whole course focused on how you can become a better person to better your community and become a leader. I never thought of myself as a leader in any way until I attended EILI. From then on I have become more involved in my community; I have joined culture committees that I feel are important to our people and have educated my family and friends on issues that concern our culture and how they can help as well.

> Autumn: EILI helped me to realize the lack of Indigenous-based knowledge within current educational systems. The western educational system was created to disconnect Indigenous Peoples from their culture and livelihood. Due to the current system, our young people are not getting the necessary education to strengthen their cultural identity. After completion of the EILI program, I have expanded my cultural knowledge and gained strong leadership skills to make positive changes in my own community. My goals are to teach young students about environmental preservation while also integrating cultural education. I feel it is essential to teach our young native students about ongoing environmental efforts in hopes that it will inspire them to pursue natural and cultural resource management.

Trisha had discovered something within herself that she didn't know she had — the ability to effect positive change in her community. Her experience in the program clearly was favorable and led to her becoming actively engaged in culturally related issues. Autumn felt similarly about gaining the skills and knowledge to be a change agent. She has clearly defined goals to be involved in environmental education that utilizes Indigenous ways of knowing in order to strengthen the cultural vitality of coming generations.

All of the EILI alumni interviewed felt that the program was a beneficial and enriching learning experience for a variety of reasons. Being able to experience an educational environment centered on Indigenous ways of knowing that also gave them college credits was a highlight. For others it was the chance to engage with the realm of decolonization, finding answers to issues in their own lives, as well as within their communities. Having the opportunity to work on their knowledge and personal development led to them feeling empowered to become leaders. The fact that these former students took time out of their busy schedules to respond to my questions also spoke to the fact that they felt the program had been a positive influence on their lives.

Environmental Awareness and Ethics

All of the students interviewed expressed a highly developed sense of environmental ethics and connection to their homelands. The overall EILI curriculum helped strengthen whatever environmental ethics they already possessed by providing new knowledge and perspectives on a wide variety of environmentally related topics; while the digital storytelling component provided them an opportunity to creatively

reflect on their relationship to the natural world through the Indigenous ways of knowing

of their people.

> Esha: I am connected to my natural world more than ever. I have seen with my own eyes the destruction of our way of life. The tradition that was taught to us is no longer being taught or even used in our homes. Our language and culture is very important to who we are. I always knew from when I was little, I am part of this everyday world. I knew that I didn't live an average life to some who only have to worry about school and sports. I was worried about not hearing my elders speak or teach me everything I need to know about our people. I'm worried that my son and his son will no longer be able to fish in our homelands. To be able to pick our traditional pine nuts due to cutting of our cedar and pine nuts trees.

Esha knows that environmental degradation is something he is directly witnessing, and it

threatens two major traditional food sources. He associates the threats to the local

environment where he lives in conjunction with threats to the continuity of language and

culture. EILI graduates also see the environmental problems facing the world at large

through the lens of their cultural backgrounds.

> Patrick: I am a Wa She Shu (Washoe) man; my identity and worldview stem from my relationship to De'goy (the Creator) and my traditional/cultural foundations. The reciprocity that is required with the relationship between people and the environment has been neglected for decades, and we are finally coming to terms with these effects such as global warming. In order to remedy the wrongs that have been made to Mother Earth, we must incorporate an Indigenous sense of being a part of the environment and stop attempting to control and conquer it.

For some, the EILI curriculum was their first in-depth exposure to environmental issues

and served to raise their consciousness and sense of responsibility. Even though Sara had

worked at a job dealing with environmental resource issues in her community, the

program expanded her awareness.

> Sara: My relationship with the environment is fairly new. Honestly, after attending EILI I looked at the environment differently and realized how the things I did would affect the environment. Instead of carelessly throwing out trash of the car I would stop and think about how it would take decades for this trash to dissolve or how it would cause harm to animals. Since I used to work in the Water Resources Department of my tribe, I started to educate myself about my tribe's

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water rights, and how there are some efforts to save our lake. I've attended important meetings with federal agencies and non-governmental organizations in order to share why the lake was such an important aspect to our tribe's culture. I think that we as Agai Diccutta Numu [trout eater people] have a responsibility to our lake for several reasons, and the first step is educating ourselves on how things got to be in such a devastating state today.

Sara's case highlights the meaningful change engendered by the environmental education aspects of EILI. Not only did she become aware of her own behaviors and their environmental impact, but she was also compelled to tackle a pressing issue in her own community through her digital story. The process of making that video afforded her the opportunity to do research and learn about the water issues affecting their lake.

Even though Trisha's video focused primarily on language, the connection between the people, language, and the environment comes through in her interview with a community elder. She was raised being closely connected to her environment, so EILI served to reinforce the ethical values she already felt strongly about.

Trisha: I have always had a pretty good relationship with the natural world growing up. I grew up hunting, fishing and other outdoor activities with my Dad and his family. As a child I remember being taught by both sides of my family that we do not waste things. Hunting and fishing, my Dad taught me how to use almost every part of anything that we may have caught, if he didn't use it then he would give it away. My grandmother reused items such as water jugs and plastic or Styrofoam and many other things in her household and would basically say the same thing: reuse everything more than once and don't be wasteful. I feel that people have to take full responsibly in taking care of the environment. People need to be more aware of the decisions they make in their everyday life, whether it is recycling, reusing, or just being conscious how you are treating the earth.

She expresses a strong sense of responsibility for the environment here that is shared by her fellow alumni.

Gene: I think people should just be more aware of their surroundings. To be more respectful or mindful of all the elements that are bestowed upon us by the Creator. This is something I try to do every day, to give thanks to Mother Earth for my life and also my livelihood. I spend the majority of my day outdoors. I own cattle and horses and they are a big part of my life. Being able to build a relationship with

my homelands and my livestock I think will be beneficial for me in the long run. I enjoy hunting and fishing too. If I do my part to take care of the land, in turn when I pray to the lands and waters and ask them for healing they will take care of me as well and continue to provide a life for myself and my family.

Gene sees his connection to the land through the lens of Indigenous ways of knowing. It is a reciprocal relationship whereby his life and livelihood are taken care of and he in turn maintains a thankful mindset and does what he can take care of the land.

Decolonizing Diet

Witnessing food become a key educational component of EILI as it evolved over the years was meaningful for me as a person who is highly aware of the issue. The concept of decolonizing one's diet — returning to more traditional foods and making healthier food choices — has been growing in popularity in recent years. A magazine, *Native Foodways*, is dedicated to the subject, books have been written, conferences and organizations such as the Native American Culinary Association have been created, and joint university-community projects have been initiated. The EILI alumni spoke about how their perspectives on the subject had been influenced by their participation in the program.

> Sara: As Indigenous people, our diets were shifted so dramatically in the past that today we are left with fragments of unhealthy physical and mental states. Through the EILI course on healthy living and foods, I learned about our ancestor's diet and how they would hunt or prepare food. Even just the physical activity they had to endure was so extreme at times but it was their way of life and kept our people sustainable and healthy. We were given a book that had almost every local native plant and it explained what it was used for and how our people prepared it. With the coming of the invaders, our people had to face relocation to areas where their traditional plants and diets were not familiar with [sic]. Their bodies and minds suffered intensely even to the point of death. Being forced onto an unhealthy diet like commodity foods kept the people from their traditional diets and it created a dependency on these types of foods to this day. Commodities are still delivered to low income native families, with small enhancements over the past decade. Our people are given these foods to support their whole families, and it has made our people suffer from diseases such as Type 2 diabetes, obesity, and other heart

problems. From not eating healthy, we even become corrupted within our minds. Not having plentiful nutrition the people suffer from depression and low self-esteem, which are proven to be high in almost all of Indian Country.

Sara's response highlights the various elements of the food issues facing contemporary Native people. It is clear that the EILI curriculum made her aware of the negative effects on physical and mental health stemming from a modern nontraditional diet and a decrease in physical activity. Patrick echoed a similar assessment in his response, while also noting the dangers of GMOs. Trisha emphasized how hiking to get natural foods from the landscape kept her ancestors in good shape.

> Esha: Our traditional foods are our way of life. We know that every plant has a purpose. I've been eating more our people's food, and I feel better than eating at McDonalds. Our people need to be educated on the cultural medicines and herbs that can help fight some of these modern day diseases.

> Gene: The hunting and gathering of traditional foods can bring one back to their roots. Making them feel connected to their ancestors and Mother Earth, for traditional foods were once the only means of survival for our people. I often think about the purity of our wild game and plants and how that purity is able to sustain life at the highest, healthiest level. We now take for granted grocery stores, restaurants and fast food places as a way to get our food. How hard our ancestors had to work year round through the different seasons makes you stop and wonder if all those food markets were to crash one day, could you survive the way our ancestors did?

Esha and Gene both stress the cultural and health importance of traditional lifeways. Esha points out that there are herbs that can heal modern ailments, but that people need to be educated about them. Gene also points out the dependence on modern food systems as being potentially dangerous. It is clear from his response and his digital story that hunting is a key part of his identity and he wants to see other Native people embrace it. They are both fundamentally advocating for environmental education based on Indigenous ways of knowing.

Making a critical assessment of modern foods and their health impacts on Native communities, as well as emphasizing traditional foods, are now significant elements of the EILI curriculum. The students' interviews showed an understanding of the various factors that have led to the present day health crises plaguing Native peoples and the means to begin to address them through decolonizing the diet. They spoke of changing their own diets and feeling the benefits of those actions. There was also a message of reconnecting with ancestral food traditions from hunting, fishing, gathering wild foods, and utilizing herbal remedies.

Final Reflection on Teaching

Working as a visiting faculty member of EILI has been a richly rewarding experience that contributed to my growth as an environmental educator working at the intersection of digital storytelling and Indigenous ways of knowing. It gave me the opportunity to apply my skills for the first time with a group of Indigenous students. The staff and students alike valued my workshops, which was reaffirming and boosted my sense of empowerment and pedagogical efficacy. Through informal means I also provided a positive influence on the incorporation of healthy eating and diet decolonization topics to the curriculum. I am thankful that there were no major obstacles to overcome during the sessions. The most significant challenge was the short time frame for the first two cohorts in which I had to teach basic video production skills and coach the students through the editing of their stories. I was used to teaching those skills over an extended period of time, so it required me to think strategically and efficiently as I prepared my curriculum for the digital storytelling workshops.

Being exposed to the overall EILI curriculum that is explicitly focused on decolonization and the revitalization of Indigenous lifeways was beneficial in providing me a window into applied pedagogy in an entirely Native context. Through reading the materials from the course modules prior to my capstone workshop and viewing video footage of the other instructors, I saw how the program was able to provide a focus on the ways of knowing and issues of the Indigenous peoples of that region, while also making the students aware of topics that affect Indigenous peoples at large, such as Federal Indian law and international advocacy efforts at the United Nations. Even though the EILI program is not explicitly an environmental education one, I witnessed how inseparable land is to Indigenous ways of knowing. Course modules touched on a wide variety of environmental themes including environmental racism and justice, climate change, biopiracy/biocolonialism, food and health issues, and creating sustainable communities through responsible technology use. I have been thankful for the times I have spent in Northern Nevada with EILI, as I developed great relationships with the students and staff. It has been an honor to work with a group of people who are committed to the empowerment of young Indigenous leaders for the betterment of their communities.

<div align="center">Summary</div>

The videos that the EILI alumni produced in the course and the statements in their interviews illustrate a vibrant dynamic when digital storytelling interacts with Indigenous ways of knowing and environmental topics. This diverse variety of environmentally themed digital stories covered hunting; personal relationship to the makers' homelands and the environmental threats to their lakes and fish; the importance of language, songs,

and traditional culture for that relationship; and the use of traditional diets and gardens to combat health epidemics plaguing Native people. The stories they crafted ranged from deeply personal autobiographical pieces meant to inspire others to ones that advocated for a particular issue.

The interviewees felt that digital media is a positive vehicle for education both within their own communities and in relation to the outside world. They spoke about it serving as a useful means to preserve language and traditions, as well as giving voice to a history that often goes untold. In their own process of working with digital storytelling they expressed that they felt enjoyment, accomplishment, and a sense of empowerment. In this context, empowerment was a dynamic process connecting the individual student's goals for themselves with positive change for their communities. On an individual level the ability to lead a sober life and seek outdoor and culturally based activities that support that life was noted. Being able to strengthen their connection to Indigenous ways of knowing, while also gaining a variety of skills and knowledge (e.g., digital storytelling, decolonization theory) to analyze and respond to the challenges facing Native peoples enhanced their sense of self-efficacy. Learning how to effectively communicate with diverse members of their communities such as elders, youth, and spiritual leaders was noted as a valuable part of the experience. One alumnus surmised from his experience that it could be an effective teaching tool for students with different learning styles. However, they also raised a variety of issues that need to be taken into consideration when utilizing digital media in Indigenous contexts, such as intellectual property, knowing when it is most appropriate to be used, elder's reluctance to be recorded, and the potential atrophying of face-to-face learning.

A variety of other aspects of EILI fostered engagement with the program. Many of the alumni I interviewed noted that a key benefit was that it was an education centered on Indigenous ways of knowing and that it provided students an opportunity to learn more about their culture, traditions, and language. Additionally, gaining tools to understand and take action in the political realm that affects Indigenous people, such as the history of colonization and practical means to engage in decolonization, led to understanding why things are the way they are in their communities and how they could create change. They felt that they had support to become leaders and have a positive effect on their own community, even if they had previously never felt so inclined or confident in that regard. That they could receive college credits for completing the EILI course was also seen as a highly beneficial and motivating reason to participate in the program.

Their sense of environmental ethics was developed or strengthened by their EILI experience. For some it supported their existing ethics, since they had grown up on the land and participated in activities such as hunting, fishing, ranching, and gathering pine nuts. For others it encouraged them to reflect substantively on environmental issues and adopt changes in their own behavior. One interview highlighted that the program's teachings provided a culturally grounded reference point for thinking about climate change. Many expressed the importance of maintaining a reciprocal spiritual relationship with the land. It was clear from the interviews and the digital stories they created that their relationship to their homelands is a significant part of their identity. With the extensive use of nature scenery and imagery of the lakes, rivers, and mountains of that region, the videos themselves spoke to a deeply rooted sense of place for these students.

The opportunity to express themselves through the medium of digital storytelling appears to have complemented well the overall EILI curriculum in fostering both reflection and advocacy on environmental issues through the lens of Indigenous ways of knowing.

Being able to tell a story that would reach an audience of peers, community members, family, and the larger world gave them an empowering set of tools that are beneficial to an up-and-coming leader. In addition to the stories they created, the story of my own journey with this group as an educator is an important one for this study. I was able to hone my ability to effectively convey a set of skills and perspectives about media production in a short period of time. The exposure to a curriculum grounded in Indigenous ways of knowing was beneficial to my thought process and allowed me to enhance the work I was doing with the Green Guerrillas Youth Media Tech Collective. It also prepared me for the project I would undertake with my own people of the Seneca Nation.

Chapter 6. Gardening Grows On Us:
Seneca Nation of Indians Cattaraugus Territory ECLC Case Study

Introduction

As the purpose of this study is to examine the relationship between Indigenous

ways of knowing and digital storytelling in environmental education contexts, the After

School 3 classroom[37] at the Cattaraugus Early Childhood Learning Center (ECLC

hereafter) provided a valuable case study. The students involved were all Senecas, and

the Three Sisters gardening and video project they participated in was an environmental

education endeavor that utilized both Indigenous ways of knowing and digital storytelling.

As I was the coordinator and lead educator of this project, I was able to observe it in its

entirety. The findings are presented through a visual narrative analysis of the video they

produced and a thematically structured polyvocal qualitative exposition that weaves

together my observations from my field journal with responses from interviews with

participants to answer the same research questions that I pursued with the Green

Guerillas Youth Media Tech Collective and the Emerging Indigenous Leaders Institute.

Research Questions

What were the experiences and perspectives of participants in programs that

utilized a combination of digital storytelling and Indigenous ways of knowing to foster

environmental learning?

- What aspects of these programs did participants find engaging and meaningful?

- How did hands-on learning experiences and mentoring interact with the digital storytelling aspects of these programs?

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[37] There are three after-school classrooms for different age groups. After School 3 is comprised of the oldest students at the ECLC.

- How do participants in these programs articulate their identities and sense of ethics in relation to the environment?

- How did participants experience a sense of empowerment?

Participants

During the entire course of the gardening and digital storytelling project at the ECLC, I conducted participant observational research and made regular journal entries about my work there. The students who participated in the project, which ran from March to November 2014, were ages 8 to 12 at the time. In that nine-month period 14 students total (three girls and eleven boys) participated, though there was a core group of ten who were involved for the majority or entirety of the project. At the time that interviews were conducted, only seven were both available and willing to give interviews. That group, plus the lead teacher who was interviewed, is listed in Table 3.

Table 3. Participants in ECLC Gardening Project

Name	Age at time of interview	Gender	Nationality
Morningstar Halftown	12	female	Seneca
Jaxon Mohawk	10	male	Seneca
Leland Parker	11	male	Seneca
Jackson Williams	9	male	Seneca
Roger Williams	10	male	Seneca
Timothy Williams	8	male	Seneca
Troy (Bear) Williams[38]	8	male	Seneca
Dee Dee Parker*	60	female	Seneca

* Adult after-school teacher.

Digital Story Visual Narrative Analysis

The 13.5-minute video[39] created by the students and myself, *Dewënödë:nö:de:' Jöhehgöh* (The Three Sisters, Our Life Sustainers), tells an audiovisual story about the garden project we worked on together from pre-gardening activities through harvesting and making food. It opens with an image of an outside wall of the ECLC building that has a large piece of inlaid stone artwork depicting a sun shining on seven human figures, each one larger than the next and with an eagle feather on their heads, representing seven generations of Senecas. A common Haudenosaunee cultural symbol, the white pine "tree of peace," is on the right with 1997 underneath it, the year the school was built. The text

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[38] In the quotations from the interviews I include the last names for Jaxon and Jackson to help differentiate the two, as well as from my own quotations.
[39] The video can be viewed at https://www.youtube.com/watch?v=oP_aa0m3xIE

"Cattaraugus ECLC Afterschool 3 Presents" dissolves in and out of the image, which then fades to black. The title in white lettering fades in, as the sounds of a water drum and horn rattle begin playing and the voices of the students speak the title. The drum and rattle continue and the Allegany Singers begin singing the Women's Shuffle Dance. The title fades and a short montage of artwork begins, featuring an image of the students' drawing of the Three Sisters (see Fig. 1); one student's rendition of the garden that includes the Onödowa′ga:′ Gawë:nö′ (Seneca language) words for corn, beans, squash, pumpkins, and trees; and a wall mural in the Seneca Nation's Education Department by noted Seneca artist Carson Waterman, which depicts the eight bird and animal clans, as well as the Three Sisters and white pine trees.

Shown next are still images of Dee Dee, me, and a group of students all working together on a laptop. This dissolves into video footage of the students running their hands repeatedly through a large burlap sack of white corn seed and then performing the steps needed to test seed germination and viability. They are shown wetting paper towels, carefully inserting them inside plastic zipper bags, and then placing ten seeds on the paper in each bag. A series of still images show them opening the bags and checking the contents. Close-ups of the sprouted corn seed show that all of the seeds have germinated. This is followed by a series of stills and video footage of the students planting a variety of seeds in cups and a terrarium that allows them to see root development. A seedling is held next to a children's science book that illustrates all the parts of plants and their development. Other images show the students holding handfuls of corn seed, smiling while caring for the plants, me teaching them how to use the flip cameras, and them using the cameras. The montage then fades to black.

The word Asdeh (outside) appears on the screen and the students' voices are heard saying "asdeh." The soundtrack song changes to the Robin Dance and a montage of still images begins, showing the area where the garden will be planted and a variety of shots of students practicing with the cameras. This dissolves into footage of a large tractor plowing the earth. Another montage of stills shows the garden area after it has been rototilled and while the rows are being marked, along with the Seneca words for "plowed ground" and "I am going to mark." This transitions into footage of the ECLC Facilities Manager and Faithkeeper Norm Jimerson speaking to the students about the importance of the Three Sisters.

The music transitions to Stomp Dance and a series of stills depicts the planting of the corn under the guidance of Richie Big Kettle and me. Students are shown digging holes, adding compost and organic fertilizer, planting seeds, covering them with dirt and paper plates, and joyfully celebrating completion of the work. The Seneca words for "we will plant corn," "fertilizer," and "it is covered with soil" also appear during the montage. Next the students are shown creating a variety of bird deterrents including stringing pieces of aluminum foil and old CDs across the rows. This segment ends with a wide shot of the whole garden and a close up of its scarecrow, which fades to black.

Another montage of stills shows the students watering the seedlings and Jackson Williams holding a handful of wild strawberries with the Seneca words for "the boy wants to eat strawberries." The last image before it fades to black shows him with his face buried in the strawberries. The next series of stills begins with Richie and the students standing in the garden, which now is clearly showing signs of plant growth. The students are weeding, watering, and planting beans next to the small corn plants. The

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Seneca word for "he is hoeing" appears on an image of student Leland Parker working a hoe among rows of chest high corn stalks.

The music changes to Stick Dance, and images of squash blossoms and students harvesting zucchini, onions, peppers, cucumbers, and various kinds of squash from their raised-bed garden box[40] are shown. Images of the garden are now very lush and vibrant. A variety of close-ups show the squash and corn plants developing, students using cameras to document their work, wild turkeys next to the field, and a small frog sitting on the end of a hoe. After a fade to black, the next montage shows the garden looking majestic with lots of squash blossoms, the corn tasseling out, and the sunflowers getting tall. A large earthworm in Morningstar Halftown's hand conveys the health of the garden. Small ears of corn become visible in the stills and the Seneca word for "corn on the stalk" appears. A professional camera crew interviewing the students is shown before it fades to black again.

The next segment of stills shows the students harvesting a variety of produce. A close up of a butternut squash includes its Seneca word. Students hold large zucchini and acorn squash over their heads with an expression of joy and pride on their faces. An image of roasted acorn squash dissolves into one of the students reviewing their video footage on a large TV with a whiteboard next to it that has "good story" and the students' ideas written on it. Students are shown holding weeding tools and using professional looking cameras in the garden. The sunflowers and pumpkins look vibrant, as do the beans, which include their Seneca word.

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[40] A small separate gardening area nearby started the year previous to this project. Each classroom at the ECLC has one for their use.

A variety of stills and video footage show the Halftown sisters and me starting to harvest the green corn,[41] as well as a student holding an ear of corn smut up to the camera. Norm is shown teaching the students how to roast the green corn. An image of a student with a big smile holding a handful of roasted ears conveys a sense of joy and accomplishment. Next a plate of large ears of fresh corn is shown with a blue ribbon pinned to them that says "Seneca Nation Fall Festival 2014 Youth Agriculture First Place." Then a table filled with several ears of corn, a variety of squash, and green bean pods is shown with a sign that says "New York State Fair Agricultural Society of Cattaraugus Reservation Special Award." Students are shown shelling dried corn, roasted corn, and beans and putting them into jars. A festive atmosphere is clearly present. They are also shown removing seeds from a pumpkin. A close up of roast corn soup is shown with the Seneca word for it overlaid. The story closes with a series of video shots of the cornfield looking very tall and lush as the Stick Dance song ends and it fades to black.

The rolling credits begin, accompanied by an Old Moccasin Dance song. The credits are also in Seneca, consisting of the words for *camera* (with a list of all the students, Dee Dee, and me), *songs*, and *much thanks* (with a list of all the community members and ECLC staff who helped with the project, as well as the financial supporters of this project). Just when it seems that the video is over and the copyright text has appeared and faded out, a fun "bloopers" section begins with a hard cut. Roger is recording himself speaking to the camera giving a narrative about how the students are very hungry and have been working in the garden for many years. He relates that they have been kidnapped and are being held hostage by me. They use the corn rows to hide

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[41] Fresh, "milky" corn is referred to as green corn, no matter what its actual color.

from me, he says. He acts like he is being chased by me and runs around interacting with the other students while making funny comments and saying "hi" to the corn. Next Keegan is shown walking around and repeating constantly "how ya doing?" in a very affected manner. The final footage shows Dee Dee trying to cover her face and avoid being recorded. She holds up a box to the camera and says, "turn it off" and "ok, stop." The screen hard-cuts to a test pattern and tone, and then cuts to a final still of one of the students covering his face with an iPad with the cornfield in the background. The image has been highly stylized with a posterization filter with "Ha′degaye:i′ !!!" (meaning *Enough!*) and a smiley face across the bottom.

This digital story is told as a straightforward chronological narrative following the project from start to finish. The primary intended audience is the students themselves, their families, and the Seneca Nation, though it is also accessible to other Native people and the wider world. It is meant to convey a Seneca focus with its use of Seneca songs and language throughout the piece. The subjects are the students, their mentors, and the garden itself. The video paints a picture of cultural revitalization through Indigenous ways of knowing and empowerment, as well as the connection between humans and nature. The students look focused, engaged, happy, and proud in the imagery. They appear to be comfortable with both gardening and camera work in many of the pictures. The beauty of the garden is highlighted through a variety of framings of the garden and the harvested produce looking vibrant and healthy. Food aesthetics are also conveyed through showing appealing shots of wild strawberries, roasted corn, and corn soup. The light-hearted bloopers section at the end reinforces that this was an activity that everyone enjoyed.

Taken as a whole, it is a testament to the capabilities of young people to bring a large-scale project to fruition with the guidance of dedicated educators and mentors. This digital story uses compelling visuals of mixed quality (due to the variety of quality and resolution capabilities of the cameras employed, as well as the varied aptitudes for photography and videography of the students), an upbeat soundtrack, and a dose of humor to relate a story of culturally relevant environmental learning and student empowerment. The fostering of self-efficacy and self-esteem, as well as Seneca lifeways, is apparent throughout the production. The major critique that could be made regards length. Many viewers of online videos, particularly younger ones, tend to be attracted to shorter pieces that are less than five minutes long. This might reduce its accessibility to some audiences. After 10 months on YouTube it had only garnered 426 views. However, some of the viewers left positive comments and there were several "likes" and no "dislikes."

Participant Interviews and Participatory Ethnography

At the end of the harvest season in October and November 2014, I conducted one-on-one interviews with the students and lead teacher. I also did a group interview with the students while we watched the video together. I have combined my field notes with excerpts from these interviews and arranged them thematically.

Digital Storytelling and Student Engagement

At the very beginning of the project it was too early in the season to do any gardening, so I spent much of the time with the students teaching basic camera skills such as proper handling, shot framing, focusing, and lighting considerations. Most of the time they seemed to enjoy practicing taking pictures both inside and outside the classroom. It

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seemed dependent primarily on "where their energy was" on any given day. Sometimes they were more engaged with the picture-taking practice than I expected and other times less so. As they gained experience, I introduced the idea of storytelling through digital video. We watched a local television news segment highlighting the work of the Seneca Nation's Food Is Our Medicine program. The students all felt it was boring. They suggested it needed music and animation to be more interesting. I asked them if they wanted to make a video and they said "yes" very enthusiastically, so I channeled that excitement by transitioning into an activity creating a slide show of images from the previous year's raised bed garden box activities. We used the iPhoto "Ken Burns effect" gliding picture dissolve and added a top 40 pop music song that they liked. When I played it for them they enjoyed watching it, as several of them had been in the classroom the year before and were in the pictures.

When we were practicing picture taking that spring with a combination of small cell-phone-sized video cameras known colloquially as "flip cams,"[42] iPads, and a digital still camera we would download the images and footage to a laptop I brought with me. When we reviewed the pictures the students took pride in pointing out ones they had taken that "came out good." They were very attentive to the idea of getting images properly in focus. Often when we would practice shooting, some of them would show me pictures they had just taken and ask me if they were good.

As the actual gardening began to take place they would take turns with the cameras and the gardening tools. I observed that they were generally quite good about

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[42] This term technically is copyrighted, though Flip cameras are no longer made, but has become a common term for cellphone sized video cameras.

sharing and being attentive to when someone was getting tired or bored with the activity they were doing and wanted to switch tasks. Morningstar and Jaxon had both demonstrated a strong work ethic in the garden and mature responsibility with handling cameras. Therefore, during the last few weeks before the Seneca Nation Fall Festival where we would present our harvest and digital story, I let them use my own still camera (a digital single-lens reflex) and hand-held video camcorder to acquire some higher-quality images and footage for use in the movie.

It was obvious during my time spent with them that all of these students were comfortable with using hand-held and desk computers and were "plugged in." I observed them often using their phones, iPods, and tablets to play games, though not during the times they were doing activities with me. One student had a school-issued iPad that she used for doing some homework assignments, but was still an avid reader of regular books. However, the majority of them were using their mobile media devices for entertainment. The prevalence of these devices necessitated some rules being put into place regarding when they could be used.

> Dee Dee: When we started to have problems with that we had to give them a certain time they could be on those things. So I think it cut back on it and we don't have to worry about it so much, but before it used to be they'd come in and we'd be having Prevention[43] and somebody would be on their phone. And we'd say you have to put that away and they'd get all upset. So then we decided to make a time just for that, so then they got used to that time period they got to do their computers or phones and all that. So we give them a little time for that and they seem to have adjusted ok to that. In the summer time it's worse cause they want to be on it all the time, that's why we had to put it down to a certain time.

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[43] Prevention is a program offered once a week that discourages the children from tobacco, alcohol, and drug use.

It was clear that electronic media devices are a normal part of their daily lives, which was not surprising to me. In my initial design of the project, I was counting on a familiarity with digital media that would translate into an enthusiasm for digital storytelling.

During the one-on-one interviews the students expressed that they enjoyed taking pictures and video.

> Morningstar: When we started making the movie it was fun. I just like working with the camera — it was my thing. When we were taking videos it was just fun.

Morningstar had demonstrated a strong aptitude for taking still pictures and video during the course of the project. Her response clearly shows that she identified with it and found it enjoyable. Others also found the use of the cameras to be a point of engagement.

> Jason: What did you think about the video and picture taking; did you enjoy it?
> Leland: [Nods head yes]. I just like taking pictures of stuff.
> Jason: What was your favorite memory about working on this project?
> Leland: Taking pictures and working all summer.

Jaxon also took pleasure in working hard in the garden and exhibiting responsibility that led to him getting to use my professional grade video camera.

> Jason: What was your most favorite and memorable part of doing this whole project?
> Jaxon Mohawk: Using the camera and videotaping everybody else working on the plants.
> Jason: What did you like so much about that?
> Jaxon Mohawk: I liked that it was expensive. They're more responsibility that you get to use it.
> Jason: So you worked fast in the garden and were good at the camera. How did that make you feel?
> Jaxon Mohawk: Good.

Jaxon had a sense of accomplishment from being fast at planting beans and getting to work with a camera that was significantly better than the ones they were using for the everyday documentation of the garden project. Roger had shown that he could work hard

in the garden, though he also liked that when he was using the camera he not only got to

improve his picture-taking skills, but he also got to take a break from manual work.

> Jason: What did you like about the taking pictures and video stuff?
> Roger: I got pretty awesome at it. I got to stand around, stay in the shade, seeing other people work.

As the youngest member of the class, Bear gave simple and honest answers that showed

that the garden work itself was centrally important to him and that the digital storytelling

was enjoyable because it was focused on the garden.

> Jason: What about the pictures we were taking and the movie we made?
> Bear: We were taking pictures of the garden.
> Jason: Did you like it?
> Bear: Yeah
> Jason: Why?
> Bear: Cause they were pictures of our garden.

From the perspective of the classroom's teacher, the work capturing still images and

video was enjoyed by many of the students and a positive learning experience for them.

> Dee Dee: I think they were good with that. Some of them really liked it. I think some of them kind of fooled around with a lot of selfies, but I think they liked it. They learned a lot about how to use the camera and how to video. I think they liked it when they finally saw the video that we made from it. They really learned a lot about videotaping.

Overall the students found taking pictures and video to be enjoyable which helped foster

overall engagement with the project. Some of them took very strongly to it, showing an

affinity for the skills needed to gather quality images, as well as a sense of responsibility

toward the equipment. Their familiarity with digital media devices seemed to be an asset

in generating enthusiasm for the activity.

While taking pictures and video generally went smoothly and easily, the editing

process was more challenging. In late July, approximately a month and a half before we

were due to screen the completed digital story, we began editing in the classroom. I

hooked my laptop up to a TV on a cart that the classrooms shared and instructed the students to take turns reviewing the footage we had collected. We developed a color-coding scheme that we used to classify clips into one of four categories: unusable, possibly usable, good to use, and "bloopers." As expected for their ages, they sometimes fooled around with the cameras doing silly things, especially one easily distracted student who often took a large number of "selfies" and another who recorded himself saying funny comments about the project. Since everyone found the silly clips amusing, they insisted that some of them be in the final video. They were excited about the idea of having a funny segment at the end, like a commercial movie having bloopers during the credits. During the clip selection process they were engaged and also demonstrated good sharing skills. When the distractible student was taking longer than his allotted time working on the laptop, the other students didn't complain and let him keep going. I had observed that he was at his peak engagement when doing hands-on, kinesthetic activities. It seemed that the other students took that into consideration without any urging from myself or the staff.

As we got further into the more intricate aspects of the editing I noticed that the students were having difficulty staying focused. It was clear with the limited time that we had and given the range of ages and maturity levels in the classroom that teaching them how to do all the editing themselves was not going to allow us to have a finished product in time for the Fall Festival. Lacie, one of the assistants in the classroom, suggested that I start working with smaller groups rather than all the students together. We did that from the next session onward, and it was more effective for keeping them engaged. Editing can be a very tedious process, and only one person at a time can use the editing software on

the computer. I facilitated the activity in such a way as they could provide decisions and input necessary while I worked the editing controls. Once we had a rough edited cut completed I had the entire classroom watch it. The traditional Seneca social dance music we used for the soundtrack clearly appealed to them, as many students, especially Jackson Williams and Morningstar, were tapping their feet vigorously to the beat. At that viewing, all the students seemed to be happy about the way the video was coming together.

During the interview process for this research, I called a group of the students to sit down one day to watch the finished video in its entirety again. I recorded our dialogue about what we were seeing on screen and what they remembered about the project. As images of them using the cameras came up, I asked them some questions.

> Jason: What do you remember about going outside with the camera?
> Bear: Taking pictures.
> Morningstar: It allowed us to make this.
> Jaxon Mohawk: I liked doing the videos.
> Jason: Did you like the iPads or the camera better?
> Morningstar: No iPads. Cameras.
> Jaxon Mohawk: I liked the cameras, not the iPads.
> Roger: The iPads were good at taking pictures, but the video it would mess it up.
> Jaxon Mohawk: Is that my video? I'm so awesome at taking videos.
>
> Jason: What do you guys remember about learning the cameras?
> Morningstar: That they're very very delicate.
> Jaxon Mohawk: And they cost a lot of money and that was fun.
> Jackson Williams: They're sensitive.
> Morningstar: It was awesome the one camera I used how you could just zoom in and you could make it look like a professional photographer did it and that was awesome. The camera focuses on what's in front and that's what people notice and the background is all blurry.

Jaxon and Morningstar responded particularly strongly to this line of questioning, which was not surprising, as they were the two students who got to use better cameras toward the end of the project. Jaxon took great pride in being able to keep the camera steady and

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get good video footage. He associated the better cameras with being more fun because of their higher value and the responsibility that came with using them. Morningstar also recognized the special nature of the more expensive cameras that I had impressed upon the group. She spoke about the greater creative capabilities of the DSLR she had used with its zoom lens and ability to take pictures with a shallow depth of field, leading to a background that is not focused. Such images and footage tend to be associated with professional photography and films. Morningstar found that aspect to be exciting, so much so that she called it awesome twice in the same sentence.

Digital Storytelling and Environmental Learning

In addition to knowing that the students enjoyed working with the cameras and found them to be engaging tools, I wanted to know how digital storytelling interacted with their learning processes around the garden. As we watched the video together, the new teaching assistant in the classroom asked them a question.

> Shawn: Do you think you guys would've remembered a lot of this stuff if you hadn't taken the pictures?
> Morningstar: Nah.
> Jackson Williams: Nope.

Though only two of the students present during that session responded to that question, during the one-on-one interviews some of the other students also expressed that they valued the digital storytelling process for enhancing their learning.

> Jason: What was your favorite part about doing the garden?
> Jaxon Mohawk: Taking out the corn. I liked taking the video of everyone doing it.
> Jason: Why did you like doing the video?
> Jaxon Mohawk: It was just fun.
> Jason: Do you feel like the video helped you to learn more about what we were doing?
> Jaxon Mohawk: Uh huh. Because you watch it over and over in order to learn more about what you're doing. And then you learn more and you can keep doing it over and over.

Jaxon felt that in addition to the sheer pleasure of shooting footage, it also provided the means to reinforce the learning that was taking place in the garden, which would translate into being able to do it again in the future. Roger concurred: "It helps learn a little bit more [sic]. Then we know what we're doing wrong and right and how to grow them if we want to grow them when we get older." Morningstar also thought making the video helped with the overall educational process taking place.

> Jason: Do you feel like making the movie enhanced the learning?
> Morningstar: Yeah, I did cause I know now that some people will remember it because some events were funny and Roger kept saying his thing should be in the bloopers. Seeing how to make a movie was awesome now because I have this one app now called iMovie and when I went on it, it reminded me about the movie that we did.

The light-hearted aspects of the digital story they created helped contribute to the memorability of the content and the experience for her. She also made a positive association between the process of working with the editing software to an editing program she has access to on her iPad. In addition to the students expressing that the digital storytelling component was valuable educationally, the classroom teacher found it to be a useful pedagogical tool.

> Dee Dee: I thought it was good for the kids cause they could see their work from the beginning to the end. They could see the plants growing. If you were just talking about it you wouldn't actually see it. They can see the finished product and they can show it to other people. I think they're really proud of what they did.

The ability of the students to have documentation of their work in the garden for their own learning process and to share it with others was important to Dee Dee, as well as the sense of accomplishment they gained. Creating a digital story about their project allowed them to review and reflect on the experience, as well as having a tangible product that

others could appreciate, which she saw as being beneficial. This speaks to both learning and empowerment outcomes.

According to those who were interviewed, students and staff alike found digital storytelling to be a helpful adjunct to learning about gardening. It facilitated them remembering what they learned by being able to see aspects of the process repeatedly. They thought the video was entertaining, particularly the "bloopers" segment at the end, thereby making it more memorable. Since the students were all "digital natives" and felt that working with the cameras was enjoyable, digital storytelling was readily incorporated as a tool to reinforce their garden-based learning. Additionally, creating something that could be shared with others gave the students a sense of pride.

Sense of Empowerment — Accomplishment and Recognition

During the interviews the students expressed feelings of accomplishment and recognition they got for a variety of activities in the project. This is a significant factor for this study as it speaks to the development of a socially constructed environmental identity, including the fostering of social capital and a sense of empowerment. Leland spoke about harvesting from the garden being particularly memorable because of the satisfaction from seeing the results of his work. Morningstar stated that she found the garden project exciting because it gave her the knowledge and ability to plant her own garden. Additionally, she mentioned that, "when I got to help people out it made me feel more mature and older. Like I was like a teacher and it helped them. I just felt like I was leading it." Having an opportunity to show leadership and maturity was important to both her and Jaxon. For all of us — the students, Dee Dee, and myself — receiving recognition and acknowledgment from parents and the community at large was an

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important component of the learning process. It reinforced the value of what we were doing.

A key aspect of the educational process was the acknowledgment that everyone involved received from others regarding both the garden and the video. In August when the garden was in full bloom, Ken Parker, the director of Food Is Our Medicine, brought a PBS camera crew to interview the students and me for a documentary about heirloom crops. Students and staff at the ECLC alike were excited by the attention being given to our garden. When I asked the students about that day, they spoke enthusiastically about it and joked with each other about who was "hogging" the time on camera.

As the project required considerable time and effort on my part, it was also satisfying for me as an educator to receive positive feedback. From the start of the project we had help, advice, and encouragement from Richie Big Kettle, a community member who had a lifetime of experience with farming, in particular growing traditional white corn. One time while we were at the garden plot he said to me that this was a good thing I was doing by facilitating this project. According to him, if it was a bad thing, people would be tripping over themselves to help, but because it was a good thing, there wouldn't be many people helping, unfortunately — but I should stay the course. I know he had been frustrated in trying to get more Nation members engaged with working on community agriculture projects in the past. One of the ECLC staff, Billy Maybee, often would tell me about the gardening he would do growing up and how his father was an award-winning gardener. I would frequently see him when I was signing in to the facility, as he was usually working the front desk. As our garden grew he would often remark that the garden was looking great. When the corn came into full bloom and the ears were

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getting big, Richie told me several times that this was the best-looking corn field on the whole territory. It was very encouraging to me to be acknowledged by both Richie and Billy, as they were older and respected community members. This encouraged me to stay motivated to do all the various tasks needed to make it an optimal experience for the students.

During the initial conceptualization of the Three Sisters garden and digital storytelling project, it was planned that the completed video would be screened for the whole community to watch. The second weekend in every September is the Seneca Nation Fall Festival, which has a variety of activities, including a parade and fair rides, Native craft and food vendors, cultural dance and craft exhibitions, an agricultural competition, and a juried art show in the multipurpose room of the ECLC. We made arrangements to have the movie playing continuously on a video monitor in the art show. The day before the festival started we began harvesting from the garden to submit entries into the agricultural competition and put the polishing touches on the video.

> Dee Dee: We picked some of our vegetables. We entered our corn and our sunflower. We entered just about everything. We entered our squash. We didn't have a watermelon. Somebody took those so we couldn't enter them but we had the sunflowers, the corn, and we did corn, beans, and squash. We won a ribbon for that, and a ribbon for our corn, and won a ribbon for our sunflower. So yeah we did really good.

Several of the students expressed a sense of satisfaction with winning multiple first place ribbons. I asked Leeland what he thought about all the ribbons that the classroom had won and he replied, "we did a good job and worked as hard as we could. We went to the garden every day and took care of it." Jaxon summarized the experience: "it was about making a crop and making food for our family and then we made a movie for the Fall

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Festival so we could win. It was fun." It was meaningful to all involved to receive that community recognition for the efforts put in to the project.

Throughout the Fall Festival I received many positive comments from community members about the garden itself, our entries in the agriculture competition, and the video. While many of the students' parents did not see the video then, as they tended to go to activities geared to children and not the art show, Dee Dee remarked in her interview that "one of my parents did say, 'I saw the video and it was really nice. You guys worked really hard on that.'" *Dewënödë:nö:de:' Jöhehgöh* was shown several times in the community that fall, including a special parents' night at the ECLC called "Taste of Jöhehgöh" that featured a dinner of traditional foods, including corn soup and roasted corn soup made from what we grew. I also presented the video and spoke about the project to the monthly elders' circle sponsored by Food Is Our Medicine, where it was well received. Additionally Food Is Our Medicine selected the video to be shown before the feature movie for their educational film series. During the after-film discussion the audience ended up talking about it more than the main feature. DVD copies were sent home with the students, and a link to a YouTube version was circulated via email and social media.

Community is a central component to any Indigenous paradigm, whether in regard to education or any other matter. For the students, it was rewarding for them to feel a sense of accomplishment that was reinforced by community recognition. It was also encouraging for Dee Dee and me as educators. Acknowledgment of the value of this project, from individual comments to the first-place ribbons at the Fall Festival and the positive feedback at the video screenings, all helped reinforce that the community

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appreciated this project and the efforts put into it by students and educators alike. It is easy to see why the video would be so popular. Adults generally appreciate seeing young people doing positive activities. In this context, the fact that the project was centered on a traditional dietary staple and was reinforcing Seneca cultural knowledge made it valuable to the community. The development of the Food Is Our Medicine project had heightened awareness about the importance of gardening and traditional foods, creating a climate that was perhaps even more receptive. Furthermore, the social capital that all of us gained from participating in this project was significant. There were bonds created among the students from working together, as well as between them, the staff, Richie, and myself. The students were seen by others at the ECLC and in the community as having done something positive to keep our agricultural traditions alive, and this garnered respect. As both an educator and community member, I too had strengthened my social connections and social capital by facilitating the project.

Indigenous Ways of Knowing

The Cattaraugus ECLC offers standard Head Start, day care, and after-school programming; however, it also has an educational mission to incorporate Seneca language and culture whenever possible. A fundamental aspect of an Indigenous pedagogy is intergenerational learning that takes place through modeling and story telling. The planting of the first seeds in the garden, which were heirloom Haudenosaunee white corn, offered an opportunity for this to take place. There was a festive atmosphere as the students from the other two after-school classrooms also participated. After Richie tilled the earth with his tractor, which had been plowed the week before, one of the ECLC staff,

Norm Jimerson, who is a Faithkeeper in the Longhouse,[44] spoke with the students about the importance to our people of the Three Sisters — corn, beans, and squash. Their name in Seneca translates roughly as "the ones who sustain us and give us life." He told them how the Three Sisters nourish mothers so they can have healthy children like them and keep the community growing strong. Through his words the students learned a deeply rooted cultural lesson about the Three Sisters, as well as being reminded about the importance of the people giving thanks for them and having a spiritual mindset when gardening. Offering gratitude is a central component of Haudenosaunee ways of knowing. The Ganö:nyök or Thanksgiving Address is spoken at the beginning and ending of most ceremonies and events. It mentions all of the biotic and abiotic aspects of nature, the cosmos, and spiritual forces. The Three Sisters are always spoken about in these recitations.

As we planted, Richie and I helped guide and show the students by example how to do the various tasks. Throughout the summer he would often stop by and lead some gardening tasks and give us advice. One time while the students were working in the field, he stepped back, watching and smiling. He said proudly, "you guys are learning." Repeatedly throughout the day he said to them, "you're gonna be corn planters." From what I observed, the students appreciated working with him. During the interviews Dee Dee told me, "they knew him so they listened to him. It was nice. He knew a lot about the corn so it really helped us." Some of the students spoke about him during the group interview.

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[44] The Longhouse is the spiritual ceremonial center in each Haudenosaunee territory for those who hold traditional beliefs. Many of the regular ceremonies, which the Faithkeepers conduct and lead, are connected to the agricultural cycle.

Morningstar: He was helpful and knows how to work a garden. He knows about that and speaks from experience.
Jaxon Mohawk: He was cool. He knows his facts.
Roger: The tractor dude with the mohawk!

Roger found him to be a fascinating person. In his one-on-one interview, he also spoke directly to the importance of intergenerational learning when he told me why he valued the adults working with them. "You and Dee Dee and Lacey and Richie, you know more knowledge from your grandparents or parents." During the planting of the corn, a student from one of the other classrooms was significantly engaged and helpful. He told me that he is used to helping his grandmother in her garden. While the majority of Senecas receive formal schooling, intergenerational learning still plays an important role in the transmission of culturally based knowledge. It was extremely valuable for developing an educational experience based upon Indigenous ways of knowing to have a knowledgeable community member helping us with the garden project every step of the way.

The entire endeavor was infused with cultural significance, which is understandable given the centrality of the Three Sisters to the traditional diet and economy of the Haudenosaunee. When we were planting the corn a bald eagle circled over us. The students became excited and called out greetings to it in Seneca. I took it as a good sign that the project would be successful. Working in an orderly fashion, we had different people doing the necessary tasks including digging each hole, adding compost and fertilizer, planting seeds, and covering the hole with dirt. The final task for each planting spot was to cover it with a paper plate to prevent predation by birds and raccoons until the seeds had sprouted into small plants. More dirt had to be placed on top of the plate to hold it down. A group of girls took on that task.

> Morningstar: We were kicking the dirt on the plates. And we were stomping it down. We were moving our feet like we were doing the ladies dance pushing the dirt around.

The women's shuffle dance, Ësgä:nyeh, is said to reflect how Skywoman[45] took a small handful of earth and moved it counterclockwise with her feet on the back of a turtle to create Turtle Island, the earth where the people live. It was nice to see that the students translated that dance into the planting activity as they moved the earth on top of the plates with their feet.

The students also took great interest in the various other methods used to protect the garden, which was fitting, as historically it was the children of the community who guarded the fields from birds and animals. When the planting with corn seeds was finished, Richie crafted a scarecrow from an unfinished wooden lacrosse stick, a fence post, a broom handle, and an old pair of coveralls. He added his straw hat with an eagle feather to make it look more "Native." Beads and soda pop cans were hung from his hands to blow in the wind and deter birds. The students loved it.

> Morningstar: We put stakes to mark the rows and then we put fish wire and tin foil around it and DVD disks to scare the birds away. We had a scarecrow too. With a feather on its hat. I liked the beads around his one hand. That's pretty.

We also used a variety of biological agents in the garden. At the very beginning Richie had stressed the importance of adding white pine cones and tobacco along with prayerful intentions and cayenne powder to the bucket of seeds that were soaking in water before planting. Jackson Williams recalled that "you had to put the spice stuff on it so the birds won't eat it." The cayenne pepper and the paper plates did an excellent job of keeping

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[45] A central figure in all versions of the Haudenosaunee creation story. For a Seneca version see Arthur C. Parker, *Seneca Myths and Folktales* (1989), Lincoln, NB: University of Nebraska.

birds and raccoons from taking the seeds. Once the garden was well established we still had to keep deer and raccoons away. We experimented with a modern organic farming pest deterrent called Plantskydd that is made from dried porcine blood.

> Bear: We put pig blood on it.
> Morningstar: And deer and all the other animals … when they try to eat it the stench will make them go *bleh.*

The students found the work of protecting the garden to be interesting and engaging. It was a challenge that they had to overcome if they wanted to have a good harvest. We kept a 4-foot area around the garden free of weeds and made sure to always walk in at the corners so that we could easily see any signs of unwanted animal visitors.

> Dee Dee: They were talking a lot about that cause at first we saw all the tracks. And then we used the stuff to keep them away and we didn't see so much.

When I asked Leland what he found to be the most interesting part of the project he replied, "when we would see deer tracks and stuff and we'd know what came in the garden and when." From planting to harvesting, the students were directly engaged in protecting the garden from predation by birds and animals. Though we used a variety of techniques, both traditional and contemporary, the students were playing a role in agriculture that Seneca children had done for many generations.

Experiential hands-on learning is another key component of an Indigenous pedagogy. I observed that the hands-on aspects of the project were strongly appreciated by the students. One of the first activities for the garden we did together in the spring was a germination test on samples from a bag of seed corn that I had kept from the Iroquois White Corn Project at Cornell several years after it had ceased operations. It was also one their first times documenting rather than just practicing with the cameras. The students loved digging their hands into the burlap bag containing about 15 pounds of seed. They

would cup the corn in their hands and let it fall back into the bag so they could feel it running through their fingers. One student seemed to be particularly engaged with visceral activities such as this. There was clearly both a kinesthetic pleasure and an ancestral connection at work for all of them as they handled and worked with the corn.

At the other end of the season, after we had harvested and dried the corn and beans, the students shelled them by hand to prepare them for cooking and storage. They seemed to take great pleasure in the activity, which I attributed to both its tactile nature and the fact that it was the next to last step before being made into food that they enjoy. There was an aesthetic aspect connected to touch, food, and a sense of accomplishment that other gardeners can relate to. The distractible student was especially adept at shelling corn and was proud of how fast he could do it. Since there were times when he could be difficult when distracted, it was satisfying to see him highly engaged with an activity. The students also seemed to enjoy saving seeds from the sunflowers, squash, and pumpkins to plant the next year.

> Dee Dee: Oh yeah, taking it off the cob. They really liked that too. Anything we can take apart and save the seeds for to dry out and use for next year they're all into that…. I think we've got sunflower seeds drying now, but all the other seeds are dried and put away…. They think that's exciting. I think a lot of them didn't realize that that's where seeds come from…. Picking off the sunflower seeds — they love that. It's good for them. And the actual planting, they liked that too. Getting outside and doing stuff like that. I think a lot of them enjoyed the gardening, the garden project.

The students responded very favorably to the hands-on aspects of the project. Not only did they express enjoyment at working with the cameras, as noted earlier, but they also embraced the gardening tasks, from testing the seeds to harvesting. While on any given day during the course of the project the students' engagement and excitement levels would fluctuate, overall the experiential learning resonated with them.

Morningstar: It was fun getting to work cause I'm one of those girls that like to get messy. I don't really like to look my best so the garden project allowed me, gave me a reason to get all dirty. But I still had to wear my old shoes though. When I got to plant the plants it was fun cause I got to learn how to do it and I got to interact with the kids that I don't even know.

Roger: I liked all of it. How I got to get dirty cause my mom doesn't like me getting dirty a lot cause it ends up staining my clothes. I was "Farmer Roger." It was so awesome.

Given the amount of discussion in the field of environmental education about "nature deficit disorder," it was satisfying to witness and hear the students reflect on the positive feelings engendered by "dirt time."

As the lead educator on the project, I too was benefitting from an Indigenous pedagogical experience by helping Richie out with his farming and gardening tasks at his home. He tended to be very critical of formal western education and emphasized that he learned much of what he knows from helping his father and grandfather when he was young. At times he said he was giving me a "crash course" in corn. It is true that while I had experimented with growing traditional varieties in my home garden, I didn't have the decades of experience that he did with growing corn and other crops every year. At different points during the summer he "tested" me by seeing how well I could operate his machinery, set raccoon traps, and do other complex homesteading-type skills. I think he was pleasantly surprised that this student from Cornell also knew how to do those sorts of things. It was clear he was happy to have me working with him and doing a project for the children of the community. He often expressed the frustrations he had felt for many years attempting to teach more people in the community about gardening. It seemed fulfilling to him that he was mentoring me, as he told me repeatedly that maybe I would be the one that would get more people interested in learning about our ancestral

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agricultural traditions; thereby his knowledge and the experience that he had gained from

his parents, grandparents, and other elders would be carried on.

During the interviews the students spoke about the importance of Native culture

and knowledge to the project. I asked Morningstar why she thinks it is important for

Indigenous people to make movies about their culture.

> Morningstar: So it can be remembered. . . . Like Celino and Barnes,[46] it's drilled
> in your head, you can't forget about it. . . . We were here before Columbus came
> so we're always going to be here. We were the original people here. So we have
> to stay.

Her observation spoke to the value of maintaining Indigenous ways of knowing and

culture through modern means of storytelling. Roger summarized the project as: "It was

about planting, working together, and learning our culture and ways to make a better

garden." When asked what the most important thing he learned was, Bear stated quite

succinctly: "The Three Sisters — corn, beans, and squash." Morningstar also had a

simple statement to make about the garden: "It was fun. I want mush! I love mush!"

(Mush is a traditional food made from ground corn mixed with maple syrup or some fatty

meat for flavoring.) The students found a high level of interest and excitement in learning

how to grow ancestral foods and tell a story about it, thereby doing their part to continue

the flow of Indigenous ways of knowing.

Food and Healthy Eating as Environmental Education

One aspect of the project that I had not anticipated was just how important the

aesthetics of food would be to the students. I knew that the idea of promoting healthy

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[46] A personal injury law firm that has ubiquitous advertising on radio, television, and billboards in the area, with an easily remembered phone number.

eating was a key concept taking root in the community with the Food Is Our Medicine project and the starting of garden boxes at the Cattaraugus ECLC the year before.

> Dee Dee: We wanted to work on teaching how to eat healthier…. We used to be farmers and then we got so far away from it. And everyone eats McDonalds now, but I think the garden helps to encourage them to grow their own food and eat healthier which is what we wanted to do. And the kids did eat vegetables and they'd eat tomatoes straight out of the garden.

By planting corn the students got to connect directly with a staple that is still often used in traditional dishes in the community, even though fewer people still grow it. One day when we were tending to the cornfield we noticed that not all the seeds had sprouted in some of the mounds. Richie instructed us to plant more seeds in those places and told us that there would be a second crop of green corn to roast. He said that when everyone else had harvested their corn there would still be some fresh green corn to roast from this field and that everyone would be jealous, so to keep it quiet. The students got excited when he said that. They had all said earlier how they really like to eat corn soup. Roasted green corn is used for making a particularly flavorful soup.

During the interviews many of the students reflected on how it was a motivating factor to know that they would be able to have traditional corn dishes from the harvest. Jaxon told me quite straightforwardly, "I just remember that we were going to make it into soup and food and I liked it more." When I asked Roger what his sense of accomplishment was now that everything had been harvested he replied, "Good and I can't wait to have the corn soup." Some of the students also recognized both the health and aesthetic aspects of the project.

> Timothy: It's healthy to eat out of your own garden. It's good for you to eat vegetables instead of all this junk food…. I liked the roasted corn we were chewing on. I don't like the beans.

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Jason: We're going to be making corn soup soon.
Timothy: Ohhh, I'll eat that! But I won't be eating the beans.

The roasting of the corn was one of their favorite activities. It gives off a rich and enticing aroma and the individual kernels can be snacked on, even though its main use is for making soup.

Morningstar: It takes a while to roast it. It's so yummy. I love it. It was just fun cause I learned that you could cook the corn so it's hard and brown. That was actually pretty good — tasted like popcorn.

Before we got to harvest the corn, varieties of squash, zucchini, and tomatoes were ready for consumption. The process of working in the garden encouraged them to try unfamiliar foods that were the result of their labors.

Dee Dee: None of them had tried squash before, but because they planted it they wanted to try it. They helped cut it all up and then we cooked it, seasoned it with different seasonings, and they tried it. They liked it. I think some of them weren't crazy about it, but they were all willing to try it cause they helped grow it. And then we talked about making the soup so they were excited about that. The roasting and the picking — when they could pick it and see how much we actually grew. I think they didn't realize how much was in that garden, and it was lot. They were surprised about how much they actually grew. We had a really good crop. That was good for them.

The students were enthusiastic about the garden, as they associated it with food they like such as corn soup. Seeing the tangible results of their collective efforts, the produce and harvest, impressed them and encouraged them to try new foods. Both the students and the teacher touched on the connection of healthy eating to the gardening.

This connection between healthy food and cultural traditions was clear to the students. The youngest one, Bear, referred to the importance of the Three Sisters numerous times throughout his interview. His mother had told me that she was thankful that he had participated in this project, as traditional knowledge is very important to their family.

Jason: What did you learn about the corn, beans, and squash and why it's important to us culturally?
Bear: Because they're the Three Sisters. They're healthy for us. They were the ones that were good for us and made us healthy.
Jason: Do you think gardening is a good way to take care of the earth?
Bear: Yeah, cause it's making people healthier.

For him it is basically self-evident that corn, beans, and squash are important to the Seneca. He also connects the well-being of the environment to that of people through the association with growing food. At 8 years of age, this student is expressing a view that suggests an environmental identity stemming from the cultural reference point of the gardening project.

Environmental Identity and Ethics

All the students interviewed expressed having an existing personal connection with nature, which would seem to contribute to a baseline environmental identity, prior to their participation in the project. They spoke about playing and exploring in the woods. A few mentioned gardening with their family and having family members who hunt, fish, and forage for wild berries. Roger spoke about the importance of nature to his well-being: "I go out in the woods. Take a walk. It calms me." Morningstar reflected on her identity and its connection to places near her home that are special to her and hold great beauty:

> I grew up around the woods. I'm like a woods girl. People think I'm not normal and I blame that on going around the woods cause it's awesome. We have this waterfall in the back and no matter how far away I go from it I still see it in my mind. It's a white waterfall and a stream going down to the creek. It's just beautiful. Beyond that there's a lake and turtles in it and there's a clearing where you can actually see the sun setting. It's just beautiful. To get there you need to go like an hour in the woods and follow the sound of the water. And then you need to go down this cliff and walk across the water and go up a cliff again and then walk on the other side. We have two miniature waterfalls. It's just pretty, especially when it's frozen…. So I have a lot of connection to nature. I grow up around it and wherever I go I just like seeing nature and it reminds me of my home.

Roger and Morningstar both articulated the importance of nature in their lives. While

Roger spoke to the therapeutic benefits of nature, Morningstar shared a clearly defined

sense of place, personal identification with the outdoors, and aesthetic appreciation of

nature.

The Three Sisters gardening project seemed to build upon the students'

preexisting awareness of the interconnectedness of humans and nature. This manifested

as an awareness of the importance of plants as a food source that should be treated with

care and respect.

> Dee Dee: I think they have to care for the plants that come from the earth and they realize that's where we get our food is from the earth so we have to take care of the earth so it can take care of us.

As the lead teacher, Dee Dee was in a position to make an assessment about the overall

impact of the project. I asked all of the students what responsibility they think people

should have to the earth and nature. Their responses showed an awareness of littering and

recycling, which can likely be attributed to their formal schooling, anti-littering

campaigns within the Seneca Nation, and an environmental education project I did with

them during the summer as part of a separate research project.[47] They also spoke about

the importance of plants as a food source, which seems to be a likely influence from the

gardening project.

> Bear: Take care of the earth and take care of things around the earth. Don't litter and don't put stuff in the water cause it goes to the sea and some animals can swallow it and they might get sick.
> Leland: To take care of it. Cleaning and recycling cause people just throw stuff on the ground and in the water. It creates pollution and it harms the air. Whenever there's garbage in my yard or something I'll pick it up. Cause some people drive

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[47] See Smith, J., DuBois, B., & Corwin, J. (2015). Assessing social learning outcomes through participatory mind-mapping. Manuscript submitted for publication.

by and throw it in the yard.
Jaxon: Respect plants. And make more plants.
Roger: Don't be littering. Don't be stepping on the plants cause if we don't have plants then we can't eat. And half of our food is from plants.
Morningstar: Well, we have to take care of it cause most of our food like fruits and vegetables, even candy it relies on fruit cause it needs the taste in it. Like grape suckers. Where would you get the grape tasting if you didn't have no grapes? And then other food cause if we didn't take care of the woods or nature or the bees then we wouldn't have no fruit, vegetables and all of the yummy stuff…. If we didn't have those foods, we wouldn't have the stuff that we like. We wouldn't have anything. And if we didn't take care of the animals then nature would be out of balance and who knows what would happen?

Once again the aspect of the aesthetics of food comes into play. The students showed a high level of awareness that their food comes from plants; therefore it was simply in their own best interest to protect the environment. However, they also demonstrated concern for the environment at large, including air and water quality, as well as the well-being of animals. Some of them highlighted littering, which is an issue in the community. Outsiders driving through the territory and community members, perhaps under the influence of drugs or alcohol, contribute to a persistent litter problem. As most of these students spoke about spending a lot of time outdoors, it is only reasonable that they would notice litter more.

Due to the small sample size, the brief responses, and the preexisting pro-environmental attitudes, it would be difficult to make any assertions about impact of the gardening and digital storytelling project on the students' environmental identities and ethics. It does seem fair to surmise that the project's focus on caring for plants, while having a hands-on experience with an agricultural cycle from planting to harvest and eating, heightened the students' awareness of the significant role of plants in their diets and the importance of having an ethical attitude toward them.

Summary

For the Cattaraugus ECLC After School 3 class, digital storytelling fostered engagement with an Indigenous ways of knowing–based gardening project, and served as a tool for increasing knowledge retention and empowerment. These students were already quite comfortable with using media devices, and they expressed that they enjoyed taking pictures and video for their digital story. Their teacher felt that they learned a lot from the experience and had gained a sense of accomplishment from creating a product that could be shared with others. The acknowledgement and appreciation of the students' gardening and video work by their peers and a variety of adults contributed to their sense of empowerment. This, along with opportunities for extended interactions among themselves and others, particularly intergenerational ones, during the nine month project seemed to enhance community bonds that could lead to increased social capital.

The two students who got to use the professional cameras toward the end of the project enjoyed the responsibility and leadership role that represented, as well as the higher aesthetic capabilities they were afforded. Students and staff alike felt that partaking in digital storytelling increased knowledge retention, since they could watch what they did repeatedly and reinforce the garden-based learning. They also felt the entertaining aspect made the video more memorable. The digital story itself presents a compelling narrative of the project. It highlights Seneca culture and language while demonstrating the capacity of the students to engage with Indigenous ways of knowing pertaining to agriculture and digital media to document the process. The students expressed how they valued knowing what to do to start and maintain a garden. The responses of participants, coupled with my participant observations and an analysis of the

video we created, provide a multi-faceted view of culturally based environmental education embracing the use of digital media as a pedagogical tool.

The project seemed to help foster a sense of empowerment through the students' experience of seeing it through from start to finish, thereby providing an exercise in individual and collective efficacy. Some students appreciated the opportunity to demonstrate leadership and maturity among their peers during the activity. Receiving recognition from the parents and community for the value of what we were doing was also noted. It encouraged and motivated the students, as well as myself, to do the hard work required to make the project a success. Winning several ribbons at the Fall Festival was meaningful to all of us, as was having the video being shown throughout the community. Having a sense of mutual accomplishment for our hard work and being given positive reinforcement through community recognition was an important part of the educational process that also strengthened our social connections.

This project facilitated students' hands-on exposure to Indigenous agricultural knowledge. In the interviews the students noted the importance of intergenerational learning in that process, as did I in my field observations. The involvement of a highly knowledgeable older community member was valued by all of us. Community-based learning through modeling is a key component of Indigenous pedagogy that was apparent in this project. The deep cultural significance of the cultivation of the Three Sisters as a central aspect of Seneca identity was a point of engagement and interest for many of the students. They also took great pleasure in utilizing a variety of techniques to prevent predation by birds and animals, fulfilling a role that was traditionally performed by Seneca children. Experiential hands-on learning was another key component the students

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found to be valuable. From planting and weeding to shelling the dried corn and saving seeds, the students were very engaged when they were participating in kinesthetic activities. Touching the earth, as well as their harvests from it, were aesthetic experiences that appealed to the senses while also fostering direct engagement with nature. All of these various elements supported the students' exposure to Indigenous ways of knowing in a contemporary educational context.

Food aesthetics played a strong role in the students' enthusiasm for the project. There was already an organized effort taking place in the community encouraging healthy eating, which emphasized a return to ancestral foods and gardening. While that was an influencing factor, for the students, their love of traditional corn dishes such as mush and soup, as well as the knowledge that what they were growing was a central part of Seneca and Haudenosaunee culture helped foster excitement for the project. The images from their digital story clearly convey a sense of pride and joy taking place during harvesting and food preparation.

All of the students exhibited a preexisting environmental identity and sense of environmental ethics in the interviews. They spoke of spending a significant amount of time outdoors doing a variety of activities and noted issues such as pollution and littering. Several of them also highlighted the importance of caring for plants as they provide food. The time spent working intimately with their garden while being exposed to Indigenous ways of knowing in regard to agriculture seemed to have impressed upon them, in a direct and visceral way, the reciprocal relationship of being a caretaker of plants and those crops in turn sustaining people with good health.

As a Seneca educator and researcher, I benefitted greatly from coordinating and leading this project. I got to spend a great deal of time with one of the community's most knowledgeable corn farmers, who is also a skilled craftsman known for his carvings, snowsnakes,[48] and lacrosse sticks. I was able to hone and refine my skills teaching both environmental topics and digital media production with a younger age group than I had ever worked with before, and this benefitted my sense of empowerment. My social capital was increased through the personal connections I made with other educators, community members, the students, and their families. I became recognized in the Seneca Nation as someone who cares about the youth, our people's ways of knowing and traditions, and as a skilled media producer and educator. There were challenges at various points with the amount of work required to keep the weeds down, some of the squash not growing as well as expected, and students having a variety of engagement levels on any given day. However, these were all overcome, and we all concluded the project having learned about ourselves and our capabilities, as well as having a visceral environmental education experience with a central aspect of our culture, Dewënödë:nö:de:ʹ Jöhehgöh.

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[48] An implement in a traditional winter sport, thrown to slide a long distance on an icy track made in the snow.

Chapter 7. What We Have Learned Together:
Discussion and Conclusions

"We're reaching a place in which there's ever-wider agreement that poetry gives us as much information about our relationship with the universe as telescopes do and that those two strains can live together and complement one another harmoniously. Those two things can happen, and that's actually not dissimilar to my culture, which asserts that on the one hand there are dreams and visions, and on the other hand there's a responsibility to maintain a clear vision of reality, and those two streams of thought and reaction have to live cooperatively together." — John Mohawk (Sotsisowah) (Seneca)

Purpose of the Study

This research sought to investigate the dynamics and impacts of three nonformal learning environments that utilized Indigenous ways of knowing and digital storytelling as key components of environmental education pedagogy. This investigation was pursued through the stories that the participants and I, as a participatory researcher, told about our experiences in these programs and the meanings we ascribed to them. At all three sites, as the primary instructor or facilitator, who has dedicated the past nine years to utilizing this modality, I wanted to understand how the program participants responded to this combination of traditional knowledge and modern storytelling tools. This study was an opportunity to build upon the work of my master's thesis while continuing to explore the use of narrative inquiry and Indigenous research methods. The questions guiding this research focused on the creation of culturally relevant learning experiences, engagement, environmental identity, ethics, personal meaning, and empowerment for participants.

The three case studies I have presented in this dissertation contribute to an understanding of the intersection of digital storytelling and Indigenous ways of knowing in these environmental learning contexts in the following areas:

- The practical application of this pedagogy with diverse groups of participants including non-Natives.

- The use of digital storytelling for facilitating student engagement and learning.

- The role of digital storytelling and nature aesthetics in mitigating videophilia and nature deficit disorder while enhancing environmental literacy.

- The use of this pedagogy in fostering environmental identity and ethics.

- The role of digital storytelling and culturally relevant education in fostering a sense of empowerment.

- The role of food-related awareness and aesthetics in environmental education.

Summary of Research Procedures

Theoretical Framework

This study's theoretical framework was informed by models of Indigenous pedagogy and ways of knowing as proposed by several Native scholars. A key concept is that the human relationship with the planet is shaped by a lived experience that incorporates nature and culture, as well as empirical observations and the use of symbols (Four Arrows, 2013). Indigenous ways of knowing combine knowledge of ecology, various physical practices required for sustenance (e.g. those pertaining to hunting, fishing, and agriculture), and a spiritual dimension that is rooted in community (Cajete, 2000). This holistic orientation is designed to foster well-being at the individual and societal levels. Learning in this context takes place through storytelling, mentoring, modeling, and enjoyment (Battiste, 2002). It also includes cultural and historical content, practical skills for specific environments, opportunities for extended time in nature, and activities that "re-enchant" students toward nature and Native traditions (Cajete, 1994).

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Literature

In order to situate this study within the relevant fields of study, I discussed literature regarding Indigenous ways of knowing, as well as the use of audiovisual media by Indigenous people, the relationship of aesthetics to environmental ethics, digital media and environmental education, environmental literacy and identity, multicultural environmental education, and the intersection of Indigenous and Western ways of knowing in environmental education. While many scholars have offered their definitions of Indigenous knowledge, ways of knowing, and traditional ecological knowledge, the common threads are: based on a long period of relationship with a specific landscape, combine observation and practice with spirituality and the metaphysical, and include complexity not recognized by many Westerners (Semali & Kincheloe, 1999; Dei, Hall, & Rosenberg, 2000; Van Damme & Neluvhalani, 2004; Newhouse, 2008; Interinstitutional Center for Indigenous Knowledge, Penn State University, 2012).

Use of audiovisual media by Indigenous people has served to foster artistic expression (Hopkins, 2006), political and environmental advocacy, and the documentation of cultural practices and languages (Ginsburg, 2002), while countering negative and stereotypical portrayals in mainstream media (Singer, 2001). Storytelling plays a significant role in Indigenous cultures (Boyd, 2009; Richardson, 2012), which are widely embracing audiovisual media (Singer, 2001; Ginsburg, 2002; Claxton, 2005), for example, in the furtherance of education and research (Scott, 2006; Blue Bird Jernigan et al., 2011; Piner, 2011; Lino, 2012; Palacios, 2012).

Aesthetics and environmental ethics are closely related in Indigenous ways of knowing (Leuthold, 1998; Cardova, 2004) and are also being articulated together by non-Indigenous philosophers who are seeking to find stronger arguments for environmental protection (Brady, 1998; Carlson, 2012). Environmental identity and ethics are strongly linked to socially situated experiences such as participation in environmental activism or environmental education programs (Kempton & Holland, 2003; Stapleton, 2015; Williams & Chawla, 2015). The development of social capital (Krasny et al., 2013) and sense of empowerment from the sharing of memories of environmental education experiences (Liddicoat & Krasny, 2014) are important factors in fostering civic engagement and action on environmental issues.

Storytelling and narratives can also play an important role in the development of environmental identity (Clayton, 2012). Some theorists contend that media literacy is an important component of a critical environmental education approach (Kahn, 2010; Blewitt, 2011). McKenzie (2008) calls for environmental education research that explores "intersubjective spaces" in the humanities such as literature, films, and other forms of media, as it provides insights into aesthetic experiences, hybridized knowledges, and multiple identities as they pertain to the intersection of social and ecological issues. Research on environmental education that utilizes audiovisual media and storytelling as a part of pedagogy has been slowly emerging in recent years and suggests it is an important area of inquiry for practitioners and researchers (Kidman, 2009; Corwin, 2010; Farnsworth, 2011; Harness & Drossman, 2011; Tsvereni, 2011). It is important to note that much of this cited work is spread throughout many countries.

Multicultural and Indigenous environmental educators highlight the importance of critical pedagogies that embrace the diversity of human culture in a substantive manner, while addressing the need for justice (Longboat, Kulnieks, & Young, 2013). "Land education" scholars note the erasure of Indigenous peoples in environmental education (Bangs et al., 2014), particularly in urban contexts (Paperson, 2014). Freidl (2011) notes the problems arising when urban Native students encounter Western forms of placed-based education, particularly when they live in cities located in their traditional territories. She emphasizes that Indigenous people and practices are commonly characterized as less "real" when not in the dominant society's prescribed settings for "real Indians." The land education paradigm advocates for intellectual decolonization, especially as it relates to issues of land and settler colonialism, an awareness of the importance of Indigenous sovereignty, a resistance to land exploitation by globalization (Bangs et al., 2014), and the destabilizing of the environmental education field's fetishizing of the local by connecting the impact of global histories and broader ideologies on local contexts, the foregrounding of Indigenous ways of knowing, and the direct participation of Indigenous peoples (Calderon, 2014).

Teaching the knowledge and skills of resistance and advocacy is a vital component of an Indigenous environmental pedagogy, as Indigenous communities are often on the frontlines of environmental problems (Ryan et al., 2013). Agyeman (2006) calls for environmental education research that examines the intersection of race, power, and culture with action, experience, behavior, and technology. He emphasizes themes of empowerment and cultural sensitivity, rather than the notions of under-representation that are popular with many academics and educators. This is especially evident in some of the

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conversations taking place among science and environmental studies educators working with Indigenous students (Aikenhead, 2011). They are negotiating an educational borderland, where Indigenous ways of knowing have historically been marginalized and Native students are currently underperforming, by finding ways to reconcile the Indigenous and the Western to create culturally relevant learning experiences that also meet formal educational requirements (Aikenhead & Jegede, 1999; Ahlquist & Kailin, 2003; Carter et al., 2003; Key, 2003; Rowland & Adkins, 2003). It is also important that non-Native students have opportunities to engage with Indigenous ways of knowing and perspectives on land and place (Greenwood, 2009; Semken and Brandt, 2010; Hensley, 2011).

Methods

This study employed narrative inquiry and Indigenous methodologies with an influence from grounded theory. The ethical approach that these methods demand was important for my accountability as a participatory researcher to the people at the three sites being examined. Stories told by participants and me were gathered through interviews, participant observation, visual narrative analysis, autoethnography, and questionnaires. They were coded and analyzed for thematic content using ATLAS.ti and then woven together to create a polyvocal narrative that spoke to the research questions. Taking a cue from grounded theory, the research data was approached with an open mind so that the stories could first "speak for themselves," then enter into a stage of analysis that would help reveal the embedded meanings.

The participants, adults and minors alike, consented to non-anonymity so that their contribution to this study could be documented and recognized. An Indigenous

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research methods perspective stresses *who* is presenting information and that person's relationships with others and the community they come from. Validity was addressed in multiple ways. My own subjectivity as a researcher and educator at the study sites was explicated clearly throughout this dissertation so that the reader can make a fair assessment of my biases and oversights. Detailed descriptions of the sites, the participants, and the research process were offered to provide as complete a picture as possible. Member checking was performed with the study participants. Two peer debriefers, one a professor, the other a Ph.D. candidate (both of whom are intimately familiar with my work), reviewed my findings chapters to see if the conclusions I was coming to made sense, point out any areas of concern, and add insights I might be overlooking. Persuasiveness, correspondence, coherence, and pragmatic use were all given consideration, as they are essential to a narrative-based methodology. The use of three different sites to explore the research questions also contributes to the validity of this study. Last, maintaining a high level of openness and transparency of the research process to both the study participants and the reader attended to issues of both validity and ethics.

<div align="center">Summary of Themes</div>

For environmental education this research sheds light on the practical application of both Indigenous ways of knowing and digital storytelling to facilitate environmental learning through student engagement, knowledge retention, development of a personal connection and ethics toward the environment, and sense of empowerment. Across the three research sites there were a number of common themes, and others that were unique to a given site. In addition to each site having a unique learning environment and

curricular approach, there were differences in participants' ages and cultural backgrounds.

There may have also been class differences among the three sites, but that kind of data

was not collected. The objective was not to be a comparative study, but to seek out the

meaningful experiences of learners through their words and digital storytelling, as well as

my observations as an educator at all of the programs.

Environmental Learning Through Digital Storytelling and Indigenous Ways of Knowing

Engagement of the youth participants through digital storytelling practices was

found in all three sites. The use of a familiar tool that involved creative expression

generated a desire to participate and stimulated interest. The promotion of environmental

learning was also observed in all three sites, though for each it had a different emphasis.

For Green Guerrillas Youth Media Tech Collective the focus was on sustainability and

the development of a critical consciousness that connected social and environmental

issues, which provided the substance for a robust digital storytelling practice. At the

Emerging Indigenous Leaders Institute, there was a sense of place and connection to a

homeland, as perceived through the lens of cultural traditions, which could be articulated

and reinforced through digital storytelling. For the Cattaraugus Early Childhood Learning

Center the learning centered on traditional agriculture and took place through hands-on,

intergenerational learning working in tandem with digital storytelling, which afforded

documentation of knowledge and experiences that could be watched repeatedly and

reinforce knowledge retention. The utilization of Indigenous ways of knowing for

environmental learning at all three sites was expressed through intergenerational

mentoring, modeling, and presentation of philosophies that focus on relationships

between people and the environment.

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In the case of the GGs there were was also a theme of digital storytelling and the aesthetics of nature working together in the Ecocinema project to promote direct engagement with the natural world. This was significant as this group of students came from the most urban setting. Some of them were "ecophobic" and had little previous experience with the outdoors. Being asked to use cameras to capture footage of flora and fauna that they found interesting or attractive stimulated an awareness of the beauty and significance of nature. Some of the participants noted that they discovered "therapeutic" benefits from time spent outdoors and have continued to seek out nature when feeling stressed or wanting time for personal introspection.

The GG participants also spoke at length about the unique pedagogy they experienced and how it had had significant impacts on their thinking. They noted that experiential hands-on learning was important, as well as being exposed to novel ideas. The program provided a safe, supportive, and non-judgmental environment for them to develop critical thinking skills. There was room for spontaneity and for self-directed learning. Together the group created a social learning environment in the strictest sense, in which adult mentors and youth participants were collectively involved in each other's education.

Most of the EILI alumni had preexisting experiences with the outdoors, and one had worked for her nation doing environmental conservation. The program provided further opportunities for environmental learning based on Indigenous worldviews. The digital storytelling component, as the capstone project for the course, seems to have reinforced what they had already been learning. A significant number of the digital stories they produced had either explicit environmental themes or connected issues such

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as language retention and identity to their local environment. The participants spoke about the impact that the course had on their thinking about issues facing Native communities, including access to traditional foods, GMOs, climate change, and environmental justice.

The ECLC students and teacher felt that digital storytelling had reinforced garden-based learning by providing a means for them to review their project repeatedly. Many expressed confidence that they would know how to garden in the future. Furthermore, the cultural focus of the activity reinforced the central role of the Three Sisters in Seneca tradition. Their enjoyment in working with the cameras facilitated their engagement with the project. They also articulated that they felt their digital story was memorable because it was funny. It is not surprising, given their young ages, that they would emphasize enjoyment as a key factor for motivating their engagement with learning.

Food as Environmental Education

Food was noted in all three groups as being an important point of engagement. Participants spoke about the value of eating healthy food instead of junk food. The GGs valued the opportunity to gain hands-on experiences at farms and community gardens while also learning about the economic, political, and social variables involved in sustainable agriculture and food justice issues. The aesthetics of good-tasting food was also important to them, as they related stories about a variety of health foods and international cuisine that they were exposed to in the program. EILI alumni expressed a high level of awareness about the dietary and health-related impacts of colonization, as well as the importance for food sovereignty and decolonization of diet of traditional food-

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gathering methods, and the benefits of the physical activity and connection with the environment that they entail. For the ECLC students an important factor in their enthusiasm for the project was the aesthetics and cultural significance of growing and eating traditional Seneca foods. They spoke in their interviews about feeling excited to learn to grow a staple crop that they enjoy. Their digital story shows them enjoying preparing their harvest for consumption.

Empowerment

The process of creating something that was tangible or doing something practical, whether a video, a garden, or public speaking and leadership skills, generated feelings of empowerment for participants. The recognition of their hard work by family and community members was a source of pride. Having their work shown to the public through screenings and other channels was particularly noted in GGs and ECLC. The GGs noted that especially memorable aspects of their experiences revolved around their high level of competence in producing aesthetically pleasing media that resonated with people and the recognition they received for their community work. They also spoke in depth about the significant personal meanings they ascribed to their participation in a group they felt was akin to family. Learning new ideas and tools to understand their lives as youth of color, creating compelling and educational digital stories, and taking action on issues important to them fostered a strong sense of individual and collective empowerment. All of them expressed feeling proud about being part of a unique endeavor that made a difference in society regarding social injustices and environmental issues. For the ECLC students, winning several first-place ribbons at the Seneca Nation Fall Festival and having their digital story shown widely to their peers, family members,

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and the wider Seneca community was an important part of their experience. EILI alumni appreciated the ability to earn college credit for the program, learning skills that empowered them to become leaders in their communities, and experiencing a culturally based education that gave them tools and concepts to analyze and resist colonialism in their own lives.

Environmental Identity and Ethics

Environmental identity is not formed in a vacuum, but is significantly influenced by social engagement (Kempton & Holland, 2003; Stapleton, 2015). Making substantive interpersonal connections was a major point of engagement for the GGs that all of them noted in their interviews. They spoke about the group being more like a family than a job. Their collective experience was something that they recalled with pleasure and that continued to serve as a source of pride. They felt like they were on the cutting edge of activism through their media work and had strong positive memories of challenging social and environmental injustices, such as racism in the Ithaca City School District and fracking.

The participants at all three sites expressed a strong sense of environmental ethics that seemed to be influenced by their exposure to the pedagogy being studied, though it appears to be varied due to varying degrees of preexisting environmental experiences and education. Prior to their participation in the digital storytelling projects, both the ECLC and EILI students reported spending a significant amount of time outdoors by themselves, with friends, and with family that influenced on their sense of relationship to the environment. The GGs had much less experience with nature contact, as well as

Indigenous cultural references about environmental responsibility to draw from coming into the program.

Throughout the interviews the participants spoke about the importance of people being responsible toward nature and more aware of the human relationship to it. The EILI alumni described the value in taking personal responsibility for carrying on ancestral foodways and decolonizing their diets, using resources frugally and responsibly, and protecting their homelands. Many of the digital stories they created spoke to personal identification with culture, language, and homelands. The ECLC students spoke about environmental ethics in terms of caring for plants and that the plants, in turn, would feed people and keep them healthy. They saw themselves as capable gardeners who were embracing the central component of their ancestral agricultural ways of knowing. Their digital story highlighted the deeply cultural rootedness of the project through its use of Seneca songs and language. For the GGs, their experiences in the program, particularly the Ecocinema project, exposed them to the value of time spent in nature and the need to protect it from fracking. They also demonstrated an awareness of the importance of environmentally friendly technologies and local, organic foods. Furthermore, they articulated complex understandings of the relationships between social and environmental issues, as well as the need to take action, that defined their identity as GGs.

<center>Discussion of the Findings</center>

This study sheds light on the experience of participants in programs where a pedagogy combining digital storytelling and Indigenous ways of knowing seems to have had a positive effect in a number of areas. As all three research sites focused on some component of environmental education, it is not surprising that the narratives presented in

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the findings chapters spoke to environmental learning. What was unique about this study and its contribution to the environmental education literature is that it found the common thread of digital storytelling, as an educational practice, to be effective in generating engagement with different programs and their learning objectives. Students of different ages, backgrounds, and cultures all found their experiences with documenting environmentally related subjects to be an enjoyable and empowering way to learn while expressing their creativity. The response of the Green Guerrillas to the Ecocinema project also supports its viability for helping make students more comfortable with nature (particularly if their experiences with it have been limited) and appreciating its aesthetic qualities in a direct way. This directly speaks to the call from Louv (2008) for educators to find ways to address "nature deficit disorder." It also strengthens a still emergent area in the environmental education literature regarding the use of multimedia technologies and media literacy to reach "digital natives," as argued for by Blewitt (2011), and provide an avenue for their use in facilitating environmental learning rather than promoting "videophila," as described by Pergams and Zeradic (2006). Furthermore, it extends the assertions made by Benmayor (2008), Sadik (2008) and Ohler (2013) about the educational benefits of digital storytelling in classroom settings to nonformal ones.

Digital storytelling can also be a vehicle for educating about and addressing injustices, as demonstrated in GGs and EILI. The literature on the subject of critical approaches to environmental education has been primarily theoretical (Bowers, 2001; Gruenwald, 2003; McClaren & Houston, 2004; Jucker, 2004; Kahn, 2008, 2010). This study provides insights, particularly in the cases of GGs and EILI, into applied liberatory pedagogies. Digital storytelling seems to be especially effective when working in

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conjunction with a comprehensive and holistic pedagogy that draws from Indigenous

worldviews and practices. This speaks to Longboat, Kulnieks, and Young's (2013) call

for environmental education to move beyond standard paradigms of learning about nature

into an eco-justice pedagogy that makes complex connections between human culture

and a wide variety of environmental issues. Furthermore, digital storytelling in these

contexts, being an audiovisual expression of symbols, could be seen as the contemporary

expression of the semiotic aspect of Indigenous pedagogy as described by Four Arrows

(2013).

For all three sites, another common thread was the use of Indigenous ways of

knowing as a significant, if not central, component of the educational approach. In the

case of the GGs, non-Indigenous youth responded favorably to being in a learning

environment that gave them opportunities to interact with and learn from Indigenous

peoples, including extended times spent each summer with a highly regarded elder, Tom

Porter, while also experiencing pedagogies drawn from Indigenous paradigms. Through

the use of digital storytelling, these youth did extensive research and conducted

interviews on Indigenous issues that left them with strong memories that influenced their

outlook on and sense of ethics toward the environment. They developed personal

relationships with individuals and communities that shaped their knowledge of local

Indigenous peoples' (i.e. Haudenosaunee) culture and history, as advocated by recent

"land education" scholarship (Bang et al., 2014; Calderon, 2014; Paperson, 2014).

Additionally, GG and EILI alumni expressed an awareness of the importance of

spirituality in their own experiences and those of Indigenous cultures that speaks to

Cajete's (2000) description of the important roles of spirituality, community, creativity,

and sustainable technologies in Indigenous ways of knowing. For the EILI participants, being immersed in a culturally based program and having the opportunity to explore Indigenous knowledge through the lens of digital storytelling was a valued experience. It seems their digital storytelling projects allowed them to articulate and reinforce what they had drawn from the overall EILI curriculum, where they had the opportunity to learn from a wide variety of Indigenous leaders and elders. The ECLC students expressed appreciation for experiencing hands-on intergenerational learning about a culturally significant tradition, while being able to document the entire process and agricultural cycle, while presenting it in a digital story using the songs and language of their people.

The findings of all three case studies speak to Duvall and Zint's (2007) assertion that intergenerational learning is fostered when complemented by hands-on learning, extended time for sustained investigation, and a local focus. Furthermore, the community-based nature of all three learning environments, a hallmark of Indigenous pedagogy (Cajete, 1994; Battiste, 2002; Four Arrows, 2013), taken together with the participants' responses, also reinforces findings in environmental education research regarding the social aspects of empowerment. Positive Youth Development empowerment goals such as efficacy and improved social skills (Place-based Education Evaluation Collaborative, 2010) were noted in these programs. The research sites also lend further support to Schusler and Krasny's (2010) findings that connecting youth to their communities and building respectful and trusting relationships in environmental education programs are important factors in positive youth development, as are the creation of safe spaces, opportunities for all learners to contribute, and new experiences.

While there are certainly other influencing pedagogical factors at each site, the action of digital storytelling seems to foster a sense of empowerment. Elements of empowerment, such as self-esteem, self-efficacy, self-worth, competency, and locus of control (Zimmerman, 1990; Perkins & Zimmermann, 1995), seem to be facilitated by the creativity, communication skills, and sense of accomplishment that digital storytelling offered in these programs. All participants in these programs expressed feeling a strong sense of accomplishment from creating tangible and practical outcomes, such as produce from a garden, action on a local issue, and digital stories. They valued that their digital stories could be distributed to a larger audience that appreciated their message and often gave positive feedback. The indications of both individual and collective empowerment lend credence to assertions of their interrelatedness (Rappaport, 1987; Wallerstein, 1992; Bergsma, 2004). Having opportunities for gaining the confidence and skills to demonstrate leadership was also important for GG and EILI alumni, who spoke about gaining a sense of empowerment through the development of critical consciousness, followed by taking action. Several ECLC students stated they felt they now knew how to grow a garden themselves, a sign of self-efficacy and competence.

Eating healthy food and the aesthetics of food were topics that showed up more prominently in the study than I had expected. The study's consideration of aesthetics leaned more toward considerations of the beauty of nature, but as the data collection progressed, it became apparent to me that food aesthetics were an important aspect of environmental education that I had somewhat taken for granted. Having food that tasted good and that they knew was good for them was important to participants, whether in the form of snacks or new cuisine in the case of GG, or produce (particularly corn) for ECLC.

Food was also associated with gaining awareness about sustainability and justice issues in GG and EILI, and the relationship of people with the environment in all three programs. EILI curriculum evolved to include a significant focus on traditional and healthy foods, partly due to my insistence on maintaining my dietary practices while there. However signs were apparent from the first cohort with the creation of a digital story focused on duck hunting that advocated for the health and self-reliance offered by practicing traditional foodways. While garden-based learning has been an emerging literature in the environmental education field in the past decade (Kennedy & Krasny, 2005; Morgan et al., 2009; Shava et al. 2010) and digital storytelling has been used to identify problems with food security and access to healthy foods in a Native community (Blue Bird Jernigan et al., 2011), the aesthetic aspects of food, as a point of engaged learning, remain to be more deeply explored. This study, with its consideration of affective experiences of nature and food, speaks to McKenzie's (2008) assertion of the importance of moving environmental education research to include aesthetic experiences.

Participation in these programs was associated with the development and strengthening of environmental literacy, identities, and ethics. Being exposed to Indigenous philosophies concerning peoples' responsibility to nature clearly influenced how they were conceptualizing and articulating this relationship. All the interviewees expressed a sense of personal accountability to do things such as clean up litter, compost food waste, conserve resources, and maintain a healthy relationship with foods, particularly ancestral ones. The non-Indigenous GGs articulated a strong identification as environmentalists, with ethical outlooks that many likened to those of Native peoples. The Indigenous students of EILI and ECLC clearly expressed culturally based reference

points for pro-environmental attitudes. The attitudes toward time spent in contact with nature in all three programs speak to Mitchell and Mueller's (2010) definition of environmental identity incorporating "biophilia." The attention paid to issues of justice by GG and some EILI alumni in their digital stories and interview responses also demonstrate the incorporation of eco-justice as an important aspect of environmental identity (Mitchell & Mueller, 2010). The kinds of experiences that these programs offered through hands-on, aesthetic, and storytelling based activities lend support to Thomashow's (1995) assertion of the key role of affective and experiential learning, as well as narrative, in the development of what he terms an ecological identity.

Taken as a whole, I would argue that this research has shown the viability of using digital storytelling and Indigenous ways of knowing to further environmental education goals, even though it favored an interpretive, rather than a positivist experimental approach. For Indigenous students it provided an engaging, culturally relevant, and empowering framework for exploring traditional lifeways, as well as contemporary environmental issues facing Native peoples. In the case of non-Indigenous learners, it provided an important breadth to their educational experience that sensitized them to new perspectives that they would not typically encounter in their formal schooling. When utilized with a comprehensive pedagogy that seeks to empower students, these practices also support the goals of the Positive Youth Development framework, such as promoting social skills and capital, community engagement, agency, and leadership skills. A significant finding from the GG and EILI sites was that increases in environmental knowledge, ethical attitudes toward the environment, and interest in responsible environmental behaviors appeared to have been enduring well after the end of

participation in these programs. This study lends support to Liddicoat and Krasny's (2014) findings about the persistence of positive memories associated with environmental learning and changes in behavior. GG and EILI alumni had graduated from their programs anywhere from two to six years prior to the time of their interviews and demonstrated strong positive recollections of their experiences, as well as continued identification with ethical environmental behaviors. This suggests that the combined digital storytelling and Indigenous ways of knowing pedagogical approach can be an effective environmental education strategy with lasting impacts.

Limitations of This Study

One critique that could be made of this study is that I am too close to the subject to be objective. This is a common criticism of research that is highly participatory. I do not find the concept of objectivity to be particularly useful because every person has a subjectivity that influences how they perceive the information they encounter. In a qualitative study such as this, I concur with Pinnegar and Daynes (2007), who assert that "what fundamentally distinguishes the narrative turn from 'scientific objectivity' is understanding that knowing other people and their interactions is always a relational process that ultimately involves caring for, curiosity, interest, passion, and change" (p. 29). That being said, I do agree that it is important for researchers to disclose their potential biases and maintain a critical reflexivity so that readers and other researchers can make an informed assessment about the conclusions drawn from a study. Such a process honors the intelligence of the readers by presenting them as complete a picture as possible of the context of the study, which of course includes the researcher's background,

intellectual location, and subjectivity. It will be up to the reader to assess if this story rings true.

The story of my becoming an environmental educator and researcher was told in Chapters 1 and 3. My involvement in each of the three research sites was further elucidated in Chapters 4, 5, and 6. It should be clear that I am personally invested in my work as a practitioner. I care deeply about the youth participants and the other adult mentors, staff, and educators I worked with in all of these programs. These factors could lead someone to perceive that I would be biased in my interpretation and presentation of the narrative and ethnographic data in this study. From my perspective, these programs have been successful, as demonstrated by the stories presented here, as well as feedback I have been privy to outside of this research coming from program participants and staff, parents and family members of participants, and community members who have witnessed the work of these groups. I have strived to provide a richly detailed ethnography of myself and the participants to give context, clarity, and voice to our experiences. It is my intention that this research should help us all — participants, myself, and readers — gain a deeper understanding of this approach to environmental learning and our experiences of it.

In regard to the research with Green Guerrillas Youth Media Tech Collective, the study could be seen to be limited by the sample included in the interviews. Not every youth participant who was in the program during its five-year existence was interviewed. Only those who had been involved in it for at least a year were included. Perhaps those who were not in the study would have a markedly different experience to report. My experience tells me that would not be the case, though that will remain unknown unless a

study of a majority of the participants is conducted. However, those interviewed included every participant who had an extended tenure in the program. An additional limitation was that the co-founder and co-facilitator of the program was not available to participate in this study. Her insights would have contributed greatly, though I do not think they would have significantly changed the conclusions I drew about the site.

The research focused on the Emerging Indigenous Leaders Institute was limited by the small window of time I had for data collection with former students. For a while it seemed as if no interviews could be conducted, due to logistics issues. Only toward the end of my research was I able to make arrangements with the students. Due to those participants' time constraints I was not going to be able to interview them at length in the same way as the other sites, so I opted to use a written questionnaire that was conducted via email. The relative brevity of those responses, and the inability to have a more fluid, semi-structured interview in person, can be seen as a limitation on capturing the depth of those alumni's experiences in the program.

Last, in the case of the Cattaraugus Early Childhood Learning Center, the age of the students seemed to be a hindrance to their ability to give in-depth interviews. I had hoped to gain more thorough narratives from them about their experiences. Since I was only able to get fairly simple answers to my questions, a sizable part of the story for that chapter is based upon my field notes and the narrative analysis of the digital story we created together. The interviews from the students and the teacher added their perspectives, and I do not disparage their value. However it could be seen as a limitation that more significant narratives of their experiences could not be included.

As this was neither an experimental study nor a quantitative one, researchers from a more positivist orientation will likely find the dedication to strictly qualitative methods to be a limitation. There are no simple cause-and-effect correlations to show. The three research sites are not being given a comparative analysis, as each is unique. Conclusions that can be drawn from this study are contextual. A qualitative study such as this one, by its nature, can generate knowledge about particular situations. However, inferences can be made about the effects of digital storytelling and Indigenous ways of knowing pedagogy in these three cases, and its applicability to other learning environments.

Recommendations for Environmental Education

The implications of this study for environmental education in both Native and non-Native community contexts are several. The use of digital storytelling and digital media technology should continue to be explored by educators as a means of engaging student interest, promoting environmental and ecological literacy, facilitating outdoor experiences, and creating memorable learning opportunities. For instance, digital storytelling tools (still and video cameras) could be used alone or in concert with other technologies, such as geographic information systems (GIS) or naturalist phone apps, in environmental and ecological literacy projects that can be story-based or not depending on the context and program logistics. For sustained projects where there are the means to do so, students of a wide range of ages can easily be taught the means of creating a narrative ranging from micro-stories (a minute or less), which can be made on a smartphone or tablet device and shared via online social media, to short documentaries that are screened at community events, film festivals, and on television.

In the case of more involved productions, the nature of the process of doing research, conducting interviews, and editing provides a means for deep and sustained engagement with a given subject that reinforces other forms of learning, such as modeling and mentoring of Indigenous ways of knowing. This kind of pedagogy, as shown in this study's three programs, can support a dynamic learning experience for students when they work together with knowledge holders on a project. It provides a valuable opportunity for intergenerational exchange while allowing students to play a positive role in the documentation and perpetuation of community-based knowledge. Additionally, digital storytelling can be an avenue for students to find an outlet for their ideas about how to improve a community socially and environmentally. Voice is particularly important for marginalized and minoritized communities, such as Indigenous people, migrants, refugees, and the urban poor. The goals of a variety of social paradigms that intersect with and are incorporated into environmental education programs, such as positive youth development frameworks focused on agency, self-esteem, and leadership, to civic ecology practices of stewardship and community engagement, can be furthered through the use of digital storytelling in varied learning settings. Age-appropriate projects of varying complexity can be crafted for students in formal settings from primary to post-secondary. Nonformal community organizations and after-school programs could readily incorporate these practices to great benefit. Informal learning spaces such as parks, museums, and nature centers have been consciously incorporating storytelling practices for some time, from static displays to human interpreters and guides that interact with the public and students. As electronic media continue to gain normativity in all spheres of

modern life, it will behoove educators in the informal realm to be knowledgeable in effective uses of digital storytelling in interpretative materials.

The incorporation of Indigenous ways of knowing, from the philosophical to the material, is also valuable for a variety of environmental education contexts. These scholars have documented the need for Native communities to have educational programs that are grounded in culture and tradition, whether presented alone or in conjunction with Western modern science, given the disruption of traditional paths of knowledge dissemination and the predominance of Western models of schooling. Digital storytelling, as well as other audiovisual, multimedia communications and artistic platforms, will likely continue to be explored in more depth by schools, community groups, artists, and scholars working in service of Indigenous communities. As a large component of Indigenous ways of knowing involves ecological knowledge, digital storytelling can serve a valuable role as a means to establish claims to territories, document sustainable lifeways, and bridge Western and Indigenous educational paradigms.

Non-Indigenous students in environmental education settings can also potentially benefit from an engagement with Indigenous ways of knowing and digital storytelling, provided it is done with a high level of respect and sensitivity. It would be beneficial to non-Indigenous students, regardless of their ethnicity, to gain through the practice of digital storytelling a greater awareness of Indigenous issues and perspectives. However, this area should be navigated with a strong sense of accountability to actual Indigenous communities through critical decolonizing pedagogies; otherwise it could easily turn into commodification, exploitation, and romanticization. Given the long-standing traditions in Western education, environmental or other, to trivialize and misrepresent Indigenous

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peoples and ways of knowing, digital storytelling should be used to help these students learn a more authentic perspective on these subjects. Indigenous people are a small segment of the population in North America; therefore the work of decolonization would ideally be taken up by allies to create wider conditions for substantive change and social, political, economic, and environmental justice.

For several decades, Indigenous leaders have been warning the world about the dangers of an unsustainable relationship with the environment. The reality and urgency of the issue of global climate change is creating new discursive spaces for re-examining the role of humanity in regard to nature. Indigenous ways of knowing can play a vital role, not only when they are practiced and lived by Indigenous peoples, but also when non-Indigenous people engage with them in ways that generate understanding and respect. This has the potential to lead to more environmentally sustainable practices by larger segments of society, as well as increased protection of Indigenous peoples' lands and lifeways.

Recommendations for Further Research

The use of technology in environmental education contexts is a growing area of research, but digital storytelling remains underexplored. Its potential as a tool for fostering ecological literacy should be examined in greater depth. All three research sites in this study suggest that it holds potential for providing an avenue for students to explore their local environment and gain ecological knowledge. Qualitative and quantitative studies could investigate the effectiveness of this tool and pedagogical approach for knowledge retention, examining in greater depth how the digital storytelling process reinforces experiential, social, and classroom learning. While this study did not identify

any aspects of digital storytelling detracting from participants' learning experiences, it would be worthwhile to explore more thoroughly the dynamics of using a technology to facilitate engagement with nature. Some of the questions future research might seek to address are:

- In what ways does viewing nature through the lens of a camera broaden or limit students' perceptions of it?

- How do digital storytelling practices interact with other forms of storytelling utilized in environmental education?

- How can digital storytelling foster critical thinking skills that support justice in environmental education?

- What are the similarities and differences between Indigenous and non-Indigenous, as well as urban and rural, students' experiences of pedagogy based on Indigenous ways of knowing?

The answers to these questions can help researchers understand four important aspects of environmental learning: the use of audiovisual technology, the role of storytelling, the achievement of goals related to critical environmental education frameworks (e.g., ecopedagogy, critical pedagogy of place, land-based education, and decolonizing education), and the tailoring of Indigenous ways of knowing–based curriculum to specific contexts. These findings could help environmental educators employing these modalities to craft their curriculum effectively to achieve the greatest benefits to their educational goals.

While there seem to be few environmental education programs that foreground digital storytelling to the extent that Green Guerrillas Youth Media Tech Collective did, it is apparent that this technology and pedagogical approach is finding its way into more programs, thereby creating more opportunities for research on its use. Furthermore, if we define environmental education more expansively, then other informal learning spaces,

such as positive youth development community groups that are expanding their programming to include environmental issues, can be researched. Although designing experimental studies could prove to be difficult, comparative ones could seek to find out how well digital storytelling works to engage students with nature compared to more traditional forms of nature contact pedagogy. In addition to engagement, an interesting aspect warranting further study is the possible effect of a narrow focus that can come from using a camera versus a broader awareness of a landscape. As digital tools become more commonplace in environmental education, researchers should continue to study their impacts on educational outcomes.

Storytelling, whether oral, written, or digitally mediated, remains a vastly under-researched area of environmental education. Though storytelling seems to have a long tradition of use by such people as outdoor educators and park guides, studies of such practices are scant to nonexistent (Payne, 2010). Whether digital storytelling is viewed as but an evolution of one of the most ancient forms of human communication or an entirely new form will continue to be explored. In the case of the confluence of Indigenous ways of knowing and digital storytelling, the mixing of ancient traditions and new technology provides fertile ground for investigating this subject. Such research could be of benefit to a wide variety of fields beyond environmental education such as Indigenous studies, media and communications studies, and anthropology.

As awareness grows around the world of climate change and the devastating effects to both land and people of extractive industries such as tar sands processing, more action and justice-oriented environmental education is emerging that would benefit from further research. Much of the literature in this area is theoretical; therefore empirical

research done in collaboration with community organizations that are taking an activist approach to environmental education would flesh out this field. Digital storytelling practices that work in support of the development of critical thinking, leading to deconstructing and challenging racism, sexism, colonialism, and other oppressive social schemas warrant study. The mechanisms by which students learn to make connections between environmental and social issues, develop a strong sense of ethics, and feel empowered to take action to create change is an area ripe for study. It is also an area that lends itself to interdisciplinary research in fields such as sociology, communications and media studies, women's studies, and ethnic studies.

Based on my review of the literature, the use of Indigenous ways of knowing in environmental education for non-Indigenous students has not previously been studied. Research regarding environmental education for Indigenous students in urban settings is emerging (Freidl, 2011; Bangs et al., 2014), and the field will certainly benefit from further thought. How students in different contexts respond to this type of pedagogy can be explored through empirical research on schools, community organizations, and outdoor education facilities. The ways in which environmental education can either respectfully and accurately engage Indigenous ways of knowing — or not — when it comes to non-Indigenous students will be a valuable contribution to the field. As more than half of all school-age Indigenous people in North America live in urban areas, research that examines how Indigenous ways of knowing are incorporated into environmental education for those populations could shed light on the continuity of culture and the reclamation of cities as Native territories, as advocated by the land education paradigm. The ability of environmental education practices and curricula to

adapt to different contextual settings has been of interest to some researchers, and this particular area is ripe for further studies.

Further research on the effectiveness of digital storytelling and Indigenous pedagogical methods, either singly or in combination, is warranted to further understand how this approach can facilitate environmental education goals such as positive changes in knowledge, attitudes, and stewardship actions. A comparative study of a standardized curriculum with one based on either digital storytelling alone or in combination with Indigenous ways of knowing would be one way of evaluating the effectiveness of these educational methods. Examination of how different age groups, cultural backgrounds, genders, etc., respond to this kind of pedagogy would also be useful. A mixed methods study that accounts for qualitative and quantitative measures might be appropriate for investigating differential responses.

Final Thoughts

In offering these suggestions for future practice and research we come to the conclusion of this written story. The process of conducting this participatory research has spiraled like a beanstalk working its way through and around the cornstalk of Indigenous ways of knowing, which supported it. Like squash, the narratives have filled in the spaces of this field of knowledge, offering a rich harvest that can nourish future endeavors. Rather than an end, it is a new beginning for my own work and that of others that will build on the information and insights I have presented within this dissertation. This has been a long journey, but an immensely gratifying one. Little did I know when I started with the first cohort of Green Guerrillas in 2006, and shortly thereafter began graduate school, that I would find myself creating new pathways in environmental education by

combining digital storytelling with Indigenous ways of knowing. All I knew was that I wanted to offer others the opportunity to be exposed to some of the ideas and technologies that have influenced and inspired me. Ever since my childhood I have been fascinated by traditional ways of deriving sustenance from the land, as well as computer and video technology. To be able to fuse my interests into becoming an environmental educator has been immensely fulfilling.

I have had the pleasure of work with a diverse array of young people who care deeply about the future of our Mother Earth and all her inhabitants. They have inspired and impressed me with their creativity, intelligence, and commitment. Many elders, peers, scholars, professors, and colleagues have given me tools and ideas that have assisted me on this path. All of them have taught me much about the relationship between humans and all our relations with which we share this precious experience of life. What you are holding in your hands, or perhaps are reading in a digital format, has been a labor of love that seeks to honor all those who generously shared their time to provide the interviews and other material that formed the body of this collective story. I want others to be inspired to continue to innovate in the field of environmental education, particularly with Indigenous and other marginalized communities. It has always been my belief that everyone has a story that deserves to be told. To be able to provide others the skills to do so has been a richly rewarding experience. That these learning processes also enhance their awareness and knowledge of the environment I feel is crucial in these times. This era of global communications and global climate change demands that people draw from both ancient ways of knowing and new technology to create a world that we can feel good about leaving to our descendants for seven generations to come and beyond.

I offer my contribution to the fields of Indigenous studies and environmental education, for academics, practitioners, and those like myself who walk in both worlds, in a humble way with the hope that it will be of value to them. I am thankful that I have had many great teachers in my life, including the greatest teacher of them all — the natural world. I close with the wise words of an influential Seneca scholar, the late John Mohawk:

> The culture that I come from saw the universe as the fountain of everything including consciousness. In our culture, we're scolded for being so arrogant to think we're smart. An individual is not smart, according to our culture. An individual is merely lucky to be part of a system that has intelligence that happens to reside in them. In other words, be humble about this always. The real intelligence isn't the property of an individual corporation — the real intelligence is the property of the universe itself (Barreiro, 2010, p. 277).

Ha′degaye:i′ (it's enough).

Appendix 1

Green Guerrillas Youth Media Tech Collective Semi-structured Interview Script

How did you come to join GGs?

What was it like when you first started out with the group?

What were your most memorable first impressions and experiences in the group?

How would you describe the overall learning environment in GGs?

How did the use of digital media tools enhance your learning experience in GGs?

How did the use of digital media tools detract from your learning experience in GGs?

Tell me about your experiences working with digital media and nature.

Tell me about your experiences working with digital media and environmental issues.

Tell me about your experiences doing hands-on learning activities outdoors.

What is your personal philosophy and outlook on the environment?

How did your experience as a GG influence that?

What responsibility do you feel people should have for the earth and nature?

Tell me a story about how you practice an ethical relationship to the environment in your own life.

What did you learn about American Indian and other Indigenous peoples' philosophies regarding the environment?

What did you learn about your own cultural background relative to the environment?

What was your experience like staying at the Native community of Kanatsiohareke?

Tell me a story about your favorite experience(s) in GGs.

What are the most important lessons you got from you experience as a GG?

Questions for Jason by Kierra

What was your inspiration for starting a group/nonprofit organization that focuses on people of color and youth?

Would you say you helped develop alternative thinking for the youth? If so how?

How did you convey what the status quo was to the youth members? How did you know that they had understood what the status quo was?

How did you know that they had begun to develop an appreciation for the environment and society?

Did the attitudes towards nature that the youth members had change over time? If so how?

In your work it shows that the youth involved in Green Guerrillas saw themselves as young storytellers. What were some of the stories that they told?

Would you say that Green Guerrillas helped with how the youth members identified themselves? In what ways? Sometimes when people are in a group they are defined by the group. Would you say that the youth members defined the group or did the group define the youth members?

When and how did you know there had been a shift in the way the youth members felt or thought about social justice, indigenous culture, racism, and the environment?

How did you incorporate your values and beliefs in running the Green Guerrillas?

In what ways did the knowledge acquired about Indigenous culture enhance the nature or dynamic of the group? And what ways did the knowledge acquired about Indigenous culture enhance the lives of the youth members?

Why digital media? As the organizer of such a remarkable group why did you choose digital media as the medium to get the youth involved? How did the youth feel about using the medium of digital media?

Were there other forms (poetry, rap, public speaking) that they used to convey their ideas, thoughts, feelings about racism, equality environmental justice, and nature?

As an organizer of Green Guerrillas, what were the most meaningful moments of the program?

Appendix 2

Emerging Indigenous Leaders Institute Student Questionnaire

1. How did you get involved with EILI?

2. What aspects of Indigenous knowledge and ways of knowing did you learn about/experience in EILI that made a significant impression on you?

3. How did the use of digital media tools (video and still cameras, internet) in the EILI course interact with Indigenous knowledge and traditional ways of learning?

4. Tell me about your experience making your own video. What do you remember about the workshop that Jason taught on digital storytelling?

5. How did your video speak to people's relationship with the natural world?

6. What insights do you have about the intersection of Indigenous knowledge and aesthetics with modern digital media tools? Do they complement each other, conflict, or a mix of both?

7. Tell me about your personal relationship with the natural world in your life. What responsibility do you feel people should have for the environment?

8. How do you see food, particularly eating healthy and using traditional foods in one's diet, as connecting to other issues facing Indigenous people?

Appendix 3

Cattaraugus Early Childhood Learning Center After-School Program Interview Script

Tell me about your experience working with digital storytelling and your garden.

What were your favorite aspects of this project?

What aspects of this project did you not care for?

Tell me about a moment in this project that you felt was a transformative learning experience for you.

How has working in the garden affected your understanding of traditional Haudenosaunee knowledge?

How has working with digital storytelling influenced your environmental knowledge?

Tell me about your personal relationship with the natural world.

What responsibility do people have to the earth and nature?

Tell me a story about how you practice a good relationship to the environment in your own life.

How do you think digital storytelling and Indigenous knowledge can work together effectively?

Tell me about your most memorable experience working on this project.

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