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Once upon a time: The power of oral storytelling as a tool for environmental education

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Dedication

This project is dedicated to Matti, who encouraged me to “just write.”

Abstract

This exploratory, qualitative study investigated how oral storytelling is being used as a tool for environmental education (EE) and professional environmental storytellers' perceptions of what makes stories effective for EE purposes. The researcher conducted interviews with seven professional environmental storytellers to gather the data. The seven storytellers came from the Eastern portion of the United States and had an average of 23 years of experience as professional storytellers. Results suggest that the seven storytellers use storytelling as a tool for EE in four ways: to connect and to inspire people, to motivate people to learn, and to teach science in a variety of ways. The storytellers tell stories to a variety of audiences that ranges from elementary school-aged youth to conservation groups to families. The participants also tell many types of stories, such as natural and cultural history stories, Native American stories, traditional folktales, and original stories. Results also indicate that effective EE stories must create a connection between the listener and the story and must balance emotions soul and science. Finally, results indicate that environmental storytellers must go through a variety of processes before they are able to effectively share stories, including finding inspiration, negotiating barriers, and developing the skills needed to effectively tell stories. This study has implications for practitioners, both for EE educators who want to use or who already use stories in their work and for storytellers who focus on environmentally related stories and programs. This study also has implications for teachers of other subjects as the findings of this study regarding the use of oral storytelling as a tool for EE could be transferred to teaching across the disciplines. This study concludes that oral storytelling is indeed a powerful tool for EE.

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CHAPTER 1

Introduction

Background

As humans, we are fascinated with story. Think back to your early school days. Do you remember facts that you learned or assignments you completed? Many people don't. Think back again; do you remember the stories you were told as a child? Do you remember the books you read or the books read to you? Stories are powerful (Egan, 1986; Greene & Del Negro, 2010; Strauss, 2006). They stick with us; they impact who we are and how we relate to the world around us. And, they can be powerful tools for education with people of all ages (Trostle-Brand & Donato, 2001; Haven, 2007).

Humankind has depended on stories for over 100,000 years as the dominant way of learning about, making sense of, and interacting with the world (Haven, 2007). For example, indigenous cultures across the globe have known this and have had strong oral storytelling traditions for thousands of years (Harrell, 1983; Haven, 2007; Greene & Del Negro, 2010). According to Haven (2007), "story predates logical thinking and argument, writing and exposition, and informative and persuasive structures by tens-of-thousands of years...every culture, tribe, and nation has developed stories" (p. 113). Stories have been used by all ancient cultures for a variety of purposes, including to teach about the natural world and to teach about how to live in and interact with the world (Stein, 1982).

Professionals from a variety of academic disciplines including education (Egan, 1989; Sobol, Gentile, Sunwolf, 2004; Sousa, 2006), medicine (Sunwolf, Frey, &

Keränen, 2005), organizational management (Haven, 2007; Silverman, 2006) and neuroscience (Haven, 2007; Sousa, 2006) have written about the power of story and storytelling as a tool for learning about and understanding the world. Haven (2007) has called storytelling the “most powerful communications and teaching tool available to humans” (p. 17).

Education is the field most relevant to this study because of the focus on storytelling as a tool for teaching in the field of environmental education. Within the field of education, many authors have indicated that storytelling creates relevance and meaning in learning (Egan, 1989; Ollerenshaw, 2006; Mallan, 1997; Shank, 1990; Strauss, 2006a, 2006b; Sousa, 2006; Wiggins & McTighe, 2005) as well as motivation for learning (Sousa, 2006; Schank & Berman, 2006). Storytelling improves retention (NCTE, 1992; Egan, 1989; Haven, 2007; Wiggins & McTighe, 2005) and comprehension (Isbell, Sobol, Lindauer, & Lowrance, 2004; Greenwald and Rossing, 1986; Haven, 2007) of content, logical-mathematical and critical thinking skills (O’Neill, Pearce, & Pick, 2004; Shiro, 2004), and sense of belonging and community (Coskie, 2010; Dyson & Genishi, 1994). Listening to stories and the teaching and use of storytelling and story structure improves comprehension (Isbell, Sobol, Lindauer, & Lowrance, 2004; Trostle & Hicks, 1998; Greenewald & Rossing, 1896) and writing (NCTE, 1992; Horn, 2005; Nelson, 1989) across the spectrum, not just in fictional texts, but in expository texts as well.

The use of storytelling as a tool for education is also supported by a variety of learning theories. These theories include brain-based learning (Sousa, 2006), constructivism (Klein & Merritt, 1994; Karagiorgi & Symeou, 2005; Wiggins &

McTighe, 2005), and the theories of multiple intelligences (Athman & Monroe, 2001; Trostle-Brand Donato, 2001) and multicultural education (Dyson & Genishi, 1994; Cheney, 2002; Sharkawy, 2008, Simpson, 2002).

In light of the support from numerous learning theories and the results indicated by numerous studies that promote story telling as an effective tool for learning (Egan, 1986; Schank, 1990; Haven, 2007; Ollerenshaw, 2006; Isbell et al., 2004; O'Neill et al., 2004), it is perhaps surprising to note how few studies have been conducted regarding the use of storytelling in the field of environmental education (EE). The handful of studies that have been conducted on the intersection of EE and storytelling support the findings of studies from other fields and suggest that storytelling can be a powerful tool for learning in the context of EE. Hadzigeorgiou, Prevezanou, Kabouropoulou, and Konsolas (2011) found that storytelling improves retention of environmental information/facts, Bizard and Schuster (2007) found that storytelling may help children develop a sense of connection to the natural world, and Payne (2010) suggested that storytelling can be a tool to help people of all ages feel a sense of engagement with the natural world. In their guide to early childhood environmental education, *Natural Wonders: A guide to early childhood for environmental educators*, the Minnesota Early Childhood Environmental Education Consortium (2002) stated that stories can be a way to engage and welcome young children to a nature center or experience, to activate prior knowledge, and to bring closure to an experience.

The North American Association for Environmental Education's [NAAEE] (2010) *Excellence in Environmental Education: Guidelines for Excellence (K-12)* and *Environmental Education Materials: Guidelines for Excellence* (2009) provide

principles that guide quality EE instruction and the development of instructional materials and lessons. In the guidelines, the NAAEE suggested additional ways in which storytelling can be a powerful tool for teaching EE. The guidelines recommended that environmental educators should strive to make EE lessons relevant to the participants in part by incorporating learners' prior knowledge into lessons. Storytelling can help do exactly this by calling up students' prior knowledge (Mallan, 1997; Schank, 1990; Ollerenshaw, 2006) and infusing the topic with emotion (Mallan, 1997; Sousa, 2006; Schank & Berman, 2006), both things that make topics relevant to the learner and motivate students to learn. Additionally, the NAAEE (2010) called for EE lessons to help students develop communication skills. The process of listening to and learning to tell stories is a real-world exercise in communication and in the development of communication skills (Mallan, 1997; Ollerenshaw, 2006).

The NAAEE (2010) documents also stated that environmental educators should develop lessons and materials that provide participants with chances to develop their multiple intelligences. Storytelling is an excellent tool for incorporating all of the multiple intelligences into a lesson, activity, or classroom (Trostle-Brand & Donato, 2001). In addition, according to the NAAEE (2010), environmental educators should strive to incorporate "creative expression," which could also include storytelling, into their lessons, activities, and materials.

Storytelling can also help professionals in the field of EE accomplish the ultimate goal of developing "an environmentally literate citizenry" (NAAEE, 2010, p. 3). According to the NAAEE (2010), "environmentally literate students possess the knowledge, intellectual skills, attitudes, experiences and motivation to make and act

upon responsible environmental decisions” (p.2). While knowledge and skill development are important objectives in EE, it is also important to consider that both awareness of and attitudes about the environment are crucial pieces of the puzzle that are necessary to meet the end goal of responsible environmental decision making and behaviors (NAAEE, 2010). According to the NAAEE (2010) “environmental literacy depends on a personal commitment to apply skills and knowledge to help ensure environmental quality and quality of life. For most learners, personal commitment begins with an awareness of what immediately surrounds them” (p. 5). Storytelling is one way to make students aware of, and to begin to care about, the natural phenomena and natural and cultural history of their local environment and their world (Nanson, 2005; Strauss, 2006; Wattachow & Brown, 2011).

In addition, Athman and Monroe (2001) wrote that “in order for environmental education programs to be effective in an educational sense, they must also be congruent with the way people learn” (p. 42). One way that people learn is through story. In light of the many other professional fields that acknowledge story telling as an effective learning tool, it seems that EE would also benefit from the use of this widely accepted tool.

Purpose Statement

The purpose of this exploratory study was to investigate how oral storytelling both is being used and can be used as an effective tool for teaching EE. Practitioners and researchers can use the findings from this study to help them better understand both the power of storytelling as a tool for EE and how storytelling is already being used as a

tool for EE. Additionally, the findings from this study provided some suggestions for how to effectively use storytelling within an EE context.

Research Questions

The research questions were crafted using Creswell's (2009) guidelines for creating qualitative research questions that convey an emerging design. The research questions were:

1. How are professional storytellers currently using storytelling as a tool for EE?
2. What are professional storytellers' perceptions about what makes storytelling effective for teaching EE?

Definition of Terms

This section provides definitions for key terms that are used in this study. The terms are defined using Babbie (2011) and Creswell's (2009) process for the definition of terms. A nominal definition of each key term, grounded in the existing literature regarding that topic, is provided below. An operational definition specifying how the concept will be measured is provided when relevant.

Environmental Education.

According to the Tbilisi Declaration (1977), environmental education "is a learning process that increases people's knowledge and awareness about the environment and associated challenges, develops the necessary skills and expertise to address these challenges, and fosters attitudes, motivations, and commitments to make informed decisions and take responsible action" (UNESCO-UNEP).

Story.

In his book, *Story Proof: The Science Behind the Startling Power of Story*, Haven (2007) distilled the definition of “story” from over 100,000 pages of research from 15 different fields. Haven’s definition was used in this study, rather than a definition from a peer-reviewed journal article, because of the lack of consensus among researchers about the definition of story (see Haven, 2007, and Stein, 1982, for more about that disagreement). According to Haven, the definition of story is “a detailed, character-based narration of a character’s struggles to overcome obstacles and reach an important goal” (p. 79).

Environmental Story.

In his book *Tales with Tails*, nationally renowned environmental storyteller Strauss (2006a) defined an environmental story as “a narrative that teaches either something about the animals, plants and natural wonders of our world or an environmental education concept like diversity, sustainability, food chains, or adaptations” (p. 4).

For the purposes of this study, the operational definition of story was an environmental story as defined by Strauss while also keeping in mind Haven’s (2007) definition of story.

Oral Storytelling.

The National Storytelling Network, one of the preeminent professional storytelling organization in the United States, defined storytelling as the “the interactive art of using words and actions to reveal the elements and images of a story while encouraging the listener’s imagination” (*What is Storytelling?* section, para. 5).

For the purposes of this study, the operational definition of storytelling was an oral performance of a story for an audience of one or more people for purposes related to environmental education.

Environmental Storytelling.

Strauss (2006a) defined environmental storytelling as “using the power of spoken word narratives to teach about the natural world and our ecological relationship to it” (p. 4).

For the purposes of this study, an environmental storyteller was considered to be a person who does environmental storytelling as defined by Strauss.

Delimitations

In order to keep the study manageable and exploratory, this qualitative study relied on purposeful sampling; that is, seven participants were purposefully selected to participate in the study. According to Patton (2002), “the logic and power of purposeful sampling lie in selecting information-rich cases for study in depth” (p. 230). Snowball sampling was also used to identify storytellers to interview. Snowball sampling, according to Babbie (2011), is a technique in which a participant “provides the information needed to locate other members of the population” (p. 180) of interest to the researcher. The researcher began by conducting interviews with several professional environmental storytellers with whose work she was familiar. The interviews continued with environmental storytellers identified by both interview participants and the researcher as potential information-rich cases.

Limitations

Due to the exploratory nature of this study, the results are not generalizable to programs or educational settings outside of those in which the participants are intimately involved. However, members of the EE community including storytellers, naturalists, teachers, and others may be able to transfer insights from this study to their own unique EE and/or storytelling programs. Additional limitations of this study are related to the small sample size with limited diversity, the exploratory nature of the study, which offers only these participants' perceptions about the research questions, and the role of the researcher as instrument in qualitative research. See Chapter Five for a more in-depth discussion of the limitations of this study.

CHAPTER 2

Review of the Literature

“It is inconceivable to me that an ethical relation to land can exist without love, respect, and admiration for land, and a high regard for its value.”
(Leopold, 1970, p. 261)

Introduction

According to Creswell (2009) there are several purposes for the literature review. The literature review shares the results of related studies thereby suggesting the importance for the current study and provides the reader with background information to compare with the results of the study. Galvan (2004) provided additional suggestions for the types of literature that should be included in the literature review. These include empirical studies, literature review sources, theoretical articles, case studies, and other types of articles, all of which are included in this literature review. The chapter begins with a brief history of storytelling and continues on to address the benefits of storytelling in educational settings and the theories of education that support the use of storytelling as an educational tool. The chapter then addresses EE and the goals of EE. Finally, this chapter discusses studies at the intersection of storytelling and EE, the area directly related to this study.

Storytelling

Humankind has relied on stories for over 100,000 years (Haven, 2007). According to Haven (2007), “evolutionary biologists confirm that 100,000 years of reliance on stories have evolutionarily hardwired a predisposition into human brains to think in story terms. We are programmed to prefer stories” (p. 4). In his book, *Origins*

and Early Traditions of Storytelling, Harrell (1983) discussed the beginnings of storytelling and provided theories regarding how this reliance on stories may have begun. Harrell (1983) suggested ancestors of modern humans would have told informal stories around the pit fire and, as early as the evolution of the vocal cords would allow, would have substituted words for the singing of nonsense sounds in rituals. And, as Harrell (1983) continued, “because lyrics carry meaning and subject matter, nobler thoughts of consequence, perhaps embodying his mythology of life and death, gave intent to the lyrics he composed for the dance. And so the roots of epic poetry came into being” (p.11). While there are no written records of such a thing, Harrell (1983) also suggested this tradition would have carried on through Cro-Magnon people who would surely have produced songs and poetry equal to the beauty of the works of art they created in caves in Spain and France.

While cultures across the world have told stories while sitting around the fire pit for eons, according to Greene and Del Negro (2010) the Westcar Papyrus, an Egyptian papyrus from between 2000 and 1300 B.C., is the first written record of storytelling. The Westcar Papyrus described the sons of a famous pyramid builder telling tales to their father to entertain him. Other ancient examples of storytelling include the earliest known heroic epic, *Gilgamesh* (which was told by the Sumerians until their culture collapsed in 2000 B.C. when the epic was taken over by the Babylonians), Homer’s *Illiad* and *Odyssey*, and Greek mythology (Greene & Del Negro, 2010).

Over its long history storytelling has served a variety of purposes. Stein (1982) explained that “historically, story was used to preserve the culture of a civilization,” (p. 489) which often involved instructing children and adults in the ways and knowledge of

the culture through storytelling. Stein (1982) also wrote that stories helped to explain natural phenomena, or why the world is the way it is, conveyed societal norms, and introduced the listeners to new ways of thinking. Plato and Aristotle both mentioned the use of storytelling as a way to teach social and moral values to children (Greene & Del Negro, 2010). Indigenous peoples from the Americas to the African continent and across the rest of the world have also used storytelling to teach their children and preserve their cultures (Greene & Del Negro, 2010). Egan (1989) wrote, “all the oral cultures that we know about used this technique prominently and even considered it sacred” (p. 456). Telling stories helped the cultures and beliefs of ancient peoples survive (Egan, 1989).

Throughout the history of storytelling, all people were able to take part in the informal telling of tales around the fire, in the fields, or while at work at the loom (Harrell, 1983). Most often these tales were ones remembered from childhood and gathered from their personal lives. Myths and epics, on the other hand, were more strictly regulated and were recited by professional storytellers, who were generally priests or professional singers (Harrell, 1983). For example, in Europe the first professional storytellers, according to Greene and Del Negro (2010), were bards—performers who sang stories about a leader’s great deeds, about historical events, or about genealogies of the great families. Bards, especially in the region of Greece, who sang while playing the *kithara*, an instrument similar to a lyre, with both hands, were in vogue for about 200 years and often sang the *Iliad* and the *Odyssey* (Harrell, 1983). They were replaced by rhapsodes who recited works, such as the *Iliad* and the *Odyssey*, instead of singing them and who held a staff, called a *rhabdos*, with one hand. Holding a

staff with one hand instead of playing the *kithara* with two hands meant that the rhapsodes were free to incorporate gestures and movement into their storytelling and to use the rhabdos as a prop (Greene & Del Negro, 2010; Harrell, 1983). Indeed, the rhapsodes are the forbearers of our current storytelling tradition with its dramatic elements including gestures and, potentially, movements around the storytelling space (Harrell, 1983).

The bards, rhapsodes, and storytellers of the days of the Roman Empire were powerful people, held in high social esteem (Greene & Del Negro, 2010). The *ollamhs* of Ireland, for example, could wear five colors and a cloak of bird feathers of many colors, compared to the six colors that could be worn by royalty (Greene & Del Negro, 2010). Indeed, storytellers in Western Europe were held in high regard as the conveyers of history, news, and entertainment until people began writing down stories that had once been only in the collective oral memory of cultures. With the invention of the printing press in 1450 and the ability to widely and cheaply disseminate stories, news, and historical accounts, the tradition of oral storytelling began to wane in the Western world (Greene & Del Negro, 2010), though storytelling traditions remained strong in other cultures across the globe.

The interest in storytelling continued to decline until stories were perceived as something only for children or for entertainment (Greene & Del Negro, 2010).

According to Greene and Del Negro (2010), the brothers Jacob and Wilhelm Grimm came to the rescue of storytelling when they published their written collections of oral tales in 1812 and 1815. While modern folklorists don't necessarily approve of their methods, the popularity of the book, *Kinder- und Hausmärchen*, encouraged the

recording of oral tales by other collectors of the era (Greene & Del Negro, 2010). The popularity of the Grimm brother's tales led to the inclusion of storytelling as an educational tool in the first kindergartens, formed in Germany by Friedrich Froebel in 1837 (Greene & Del Negro, 2010). German immigrants brought the idea of kindergartens to the United States where the first kindergarten opened in 1873 (Greene & Del Negro, 2010). Teaching instruction for the staff members of the kindergartens included how to use storytelling in the classroom. In 1905, Sara Cone Bryant, a kindergarten teacher, wrote *How to Tell Stories to Children*, the first storytelling text to be published in the United States (Greene & Del Negro, 2010).

From these humble and uncertain roots there has been a revival in storytelling occurring in the United States since approximately the 1970s (Sobol, Gentile, & Sunwolf, 2004). Sobol, Gentile, and Sunwolf (2004) wrote that, since the early 1970s, "practitioners and scholars across a wide spectrum of social, artistic, religious, therapeutic, and academic fields have been vigorously reclaiming the powers of storytelling as fundamental to their work" (p. 1). There are many books currently in print about how to use stories and storytelling in school classrooms (Hamilton & Weiss, 2005; Haven, 2000; Kraus, 1998; Pellowski, 2008), in organizational management (Silverman, 2006), and in medicine (Harter, Phyllis, & Beck, 2005). There are also prominent professional storytelling associations promoting the use of storytelling and raising the work of storytellers to a professional level. These associations include the National Storytellers League, founded in 1903 as the National Story League; and the National Storytelling Network, founded in 1975 as the National Association for the Preservation and Perpetuation of Storytelling (Greene & Del Negro, 2010).

Despite the revival of interest in storytelling as a tool for teaching both children and adults, in most cases storytelling continues to be outside of mainstream educational pedagogy as a supplemental activity or separate unit of study (Haven, 2007). The perception of storytelling as something on the sidelines of academia and educational practice is slowly changing. In 2004 the storytelling field began publishing its own peer-reviewed journal, *Storytelling, Self, Society: An Interdisciplinary Journal of Storytelling Studies*. Sobol, Gentile, and Sunwolf (2004), authors of the introduction to the inaugural issue, stated that the revival in storytelling led to an increased need for peer-reviewed studies to back up anecdotal stories of storytelling's power in a variety of settings and to the need for a forum in which to share those studies.

Storytelling and Education

There are many benefits of using storytelling in educational settings. One benefit is that storytelling can make the information being presented relevant and meaningful to the learner (Schank, 1990; Ollerenshaw, 2006; Haven, 2007; Wiggins & McTighe, 2005). Information is made relevant and meaningful when the information connects to the learner's own prior knowledge and experiences. According to Athman and Monroe (2001), "learning can occur only when the new idea or concept can be integrated into the learner's existing conceptual system" (p. 43). Thus, Athman and Monroe (2001) explained that teachers should bring learners' prior knowledge into the classroom so that students can use what they already know as the spring board for learning new information. Storytelling is one tool that can activate prior knowledge so that learning can occur. Ollerenshaw (2006) wrote that "storytelling serves to inform students about the purpose of the upcoming activity or concept, prompts questions, sparks thinking

about the concept, and triggers connections with prior experiences” (p. 34). According to Haven (2007), activating prior knowledge will make the content more relevant to the learner, thus leading to the potential for more learning to occur.

Schank (1990) went into more depth on the role of story in calling up prior knowledge and wrote about the role of index labels in memory. Haven (2007) defined these index labels as “reference points in the new material that access banks of prior knowledge or key information points in neural maps” (p. 72). Schank (1990) suggested that stories are useful because of all the indices they come with. These indices may be locations, attitudes, quandaries, decisions, conclusions, or whatever. The more indices we have for a story that is being told, the more places it can reside in memory. Consequently, we are more likely to remember a story and to relate it to experiences already in memory. In other words, the more indices, the greater the number of comparisons with prior experiences and hence the greater the learning. (p. 11)

It is interesting to note that even if the story or the content within the story is unfamiliar to the learner, it appears the mere use of story structure can lead to an activation of the learners’ prior knowledge of stories, thus making the content more relevant to the learner (Haven, 2007). Haven (2007) explained that story structure is familiar to us because of how our lives are saturated with story from the time we are young children. Because story structure is familiar, the structure of a story can be the trigger that activates a learner’s prior knowledge, even when the content is unfamiliar to the learner, thus providing the learner with opportunities to make meaning and put the content into memory. When the content is relevant and prior knowledge has been

activated, learning is more likely to occur (Athman & Monroe, 2001; Haven, 2007; Schank, 1990).

Content that is relevant to the learner can help create motivation and enthusiasm for learning; storytelling (and story structure) is one way to make a topic relevant, thus increasing motivation and enthusiasm for learning about the topic. Schank and Berman (2006) wrote that “people remember stories that are well told, and that are centered on ideas the listeners either know well or want to know well” (p. 222). Stories can also help make content that first appears to be irrelevant or abstract meaningful and engaging for learners (Wiggins & McTighe, 2005). Schank and Berman (2006) further explained that a good storyteller can get the learner deeply involved in the story, making the listener feel as if they are part of that experience. The involvement and activation of what the learner already knows and cares about can help lead to greater motivation for learning about the content.

Another way to increase motivation and enthusiasm for learning is to infuse the content with emotion (Sousa, 2006; Nansen, 2005; Mallan, 1997; Haven, 2007). It is important to engage a learner’s emotions because learners will remember information with which they have an emotional connection (Sousa, 2006; Schank & Berman, 2006). One of the differences between stories and other forms of communication (for example, journal articles, text books, and political statements) is that stories engage the learner’s emotions (Sousa, 2006; Haven, 2007; Schank & Berman, 2006; Egan, 1989). Mallan (1997) suggested that stories are easier for people to remember than these other forms of communication because of the ways that stories engage the listener’s emotions.

Sturm (2000) conducted an innovative and engaging study in which he interviewed 22 people immediately after they attended a storytelling performance and his findings support the idea that storytelling involves the listeners emotionally. Sturm asked open-ended questions about their experiences as storylisteners and identified characteristics of the “storylistening trance” (Stallings, 1988, p. 6). Characteristics of the storylistening experience that emerged from the data included lack of awareness of surroundings, distortion of time, a sense of “placeness,” lack or loss of control of the process, a sense that the story was real and really happening, and an engagement of receptive channels (Sturm, 2000). In addition to the engagement of visual, auditory, and kinesthetic receptive channels, Sturm (2000) found that the listeners emotionally engaged with the storytelling experience. He identified five frames of emotional involvement, including “an emotional response to (1) the telling, (2) the story, (3) the story characters, (4) one’s past experiences or memories, and (5) the storylistening experience as a whole” (2000, p. 293). He added that the listener’s perceived connection with the storyteller might be a sixth frame and that all of these frames of emotional engagement are deeply interconnected.

There is ample evidence that stories and storytelling also help learners comprehend the information being presented. Greene and Del Negro (2010) wrote about the benefits of storytelling for children who are having trouble transitioning to and comprehending written texts. They suggested that storytelling allows even students who are not yet fluent readers to be lost in the story in the way a fluent reader can be lost in a book. Mallan’s (1997) findings from a case study of a 10-week storytelling workshop in a classroom of seven to eight year olds in Australia agreed with Green and Del Negro’s

(2010) statements. He suggested that stories told orally allow all learners to understand the story in part due to the variety of communication styles used while telling a story, which include gestures and facial expressions. Haven's (2007) review of the storytelling literature agreed with Greene and Del Negro (2010) and Mallan (1997). According to Haven (2007),

researchers who have studied reading and listening comprehension universally—*universally*—support two concepts: first, readers (and listeners) more readily comprehend and retain key narrative information and concepts when they are presented in story form. Second, learning story structure improves comprehension for all types of narrative texts—expository as well as story. (p. 90, emphasis original)

Greenewald and Rossing (1986) conducted a study with 22 fourth-graders from southeastern Minnesota, USA, to determine the short- and long-term effects of teaching story grammar and self-monitoring strategies on student comprehension. The results indicated the experimental group significantly outperformed the control group. The experimental group were taught about story components including setting, characters, initiating event, goal, problem, and resolution and were also instructed in self-monitoring strategies so they would recognize they needed to reread the text when they did not fully understand a story component. The control group followed the basal reader curriculum, thus they read the stories and completed a variety of skills based activities and worksheets. The experimental group also significantly outperformed the control group on both assessments during the delayed posttest four weeks after the last

treatment. The authors concluded that instruction in story structure affected comprehension in both the short- and long-term.

Isbell, Sobol, Lindauer, and Lowrance (2004) also conducted a study to determine the effects of storytelling and story listening on long-term comprehension of information. In particular, they studied the effects of storytelling versus storybook reading on the story comprehension and oral language development of three- to five-year-old children. The authors concluded that including storytelling in the curriculum “would assist children in expanding story comprehension, oral retelling, and recognizing the elements of a story” (Isbell et al., 2004, p. 162) and that storytelling could be a powerful tool in literacy development. While it was not one of the elements being formally studied, the researchers also observed that the children in the storytelling group seemed far more engaged and attentive during the storytelling experience than did the children in the storybook reading group.

Trostle and Hicks (1998) conducted another study, this one in Central England, comparing children’s story comprehension after watching an adult tell a story versus listening to an adult read the same story. The results indicated there was a significant difference between the two groups, with students in the “story tell” group scoring significantly higher on both the comprehension and vocabulary measures; in other words, the children in the “story tell” group understood the story better than the children in the other group and gained a better understanding of the vocabulary used in the story.

Storytelling also has the potential to help increase retention of the information presented in the story (Sousa, 2006; NCTE, 1992; Haven, 2007). Haven (2007) wrote that “using stories enhances memory and facilitates information recall. That applies

both to the story, itself, and to pertinent information (for example, concepts, facts, attitudes, and beliefs) contained within the story” (p. 72). It is worth repeating Schank’s (1990) findings that one of the things that makes a story stick in our brains is the amount of prior knowledge activated by a story. The National Council of Teachers of English’s (NCTE) 1992 position paper titled *Guideline on Teaching Storytelling* stated that

story is the best vehicle for passing on factual information...The facts about how plants and animals develop, how numbers work, or how government policy influences history—any topic, for that matter—can be incorporated into story form and made more memorable. (para. 8)

Haven (2007) referenced two small studies regarding the impact of storytelling on student retention. Both studies found oral storytelling improved students’ memory and recall of the information presented. One of the studies cited by Haven is an unpublished dissertation by Michigan State University student Janner (1994) who presented the same story to four fourth-grade classrooms in a different way for each classroom, including reading the story out loud, telling the story, giving the students copies of the story to read, and showing a video of the story. Janner (1994) returned to the classrooms to interview the students one month after the treatment to see how the delivery method impacted their long-term memory of the story. He found that students from the class where he had told the story were more easily able to recall the story without prompting and retained vivid images of the story. Janner (1994) found that the students in the class where he told the story were also more enthusiastic and excited

about recalling the story than were students in the classes that experienced the story through other delivery methods.

Storytelling can be a powerful tool for developing communication skills such as speaking, listening, and reading skills (Trostle-Brand & Donato, 2001; NCTE, 1992; Horn, 2005; Nelson, 1989). Storytelling can also be a tool for developing critical and logical thinking skills (Schiro, 2004; Haven, 2000; Lunge-Larsen, personal communication, January 29, 2013). In part, storytelling may help develop these skills because storytelling makes abstract concepts, such as those in science or mathematics, concrete; stories help make a concept easier to conceptualize (Schiro, 2004; Mweti, personal communication, November 27, 2012). Many of the studies conducted on this topic are in the context of mathematics (O’Neill, Pearce, & Pick, 2004; Schiro, 2004; Casey, Erkut, Ceder, & Young, 2008). For example, O’Neill, Pearce, and Pick (2004) conducted a landmark study in Ontario with 41 three- to four-year-old children. The researchers found that “providing children with experience with narrative may later enhance their ability to tackle problems in the mathematical arena” (p. 178). Casey, Erkut, Ceder, and Young (2008) conducted a study that investigated the effects of using an adventure story as the context for teaching geometry to kindergarten children. In particular, they wanted to see what effects such a teaching method would have on racially and ethnically diverse students from lower income backgrounds. The study involved 155 kindergarten-aged children. Students in the control group worked in cooperative groups over the course of the study to help characters in the story solve mathematical problems. The researchers found that storytelling was an “effective medium for the learning, retention, and transfer of geometry concepts for diverse

disadvantaged learners within urban schools” (p. 42). The results of these studies (O’Neill, Pearce, & Pick, 2004; Casey, Erkut, Ceder, & Young, 2008) support the notion of storytelling as an effective teaching tool for learning and recall of information and for developing logical thinking skills.

Strauss (2006b) addressed the scientific context of storytelling as a tool for developing logical thinking skills. According to Strauss, storytelling can help develop the critical thinking skills necessary for solving scientific and environmental issues. He writes, “a story helps students ‘change gears.’ When you change from science lecture to a story, it gives students a chance to rest the logical side of their brains and engage the creative, imaginative side of their brains. This is important for the problem-solving aspects of science” (p. 2).

Not only can storytelling help facilitate the development of academic skills including comprehension, retention of information, and logical thinking skills, it can also help create a sense of community and belonging (Sobol, Gentile, & Sunwolf, 2004; Dyson & Genishi, 1994; Greene & Del Negro, 2010; Haven, 2007). The creation of such a community, for example in a classroom, can lead to a learning environment in which students can optimally learn and perform (Sousa, 2006a, 2006b). According to Greene and Del Negro (2010), “storytelling creates a community of listeners out of a group divided by age, gender, race, and economics. Promoting and telling tales from many cultures raises awareness of those cultures, and promotes pride in the cultural heritage of individual listeners” (p. xxiii). Storytelling can help learners feel involved and welcomed into the activity in part because of eye-contact between teller and listener and in part because storytelling is an act of co-creation between listener and teller that

actively acknowledges and involves both parties (Coskie, Trudel, & Vohs, 2010; Strauss, 2006a, 2006b).

Numerous case studies demonstrate the power of storytelling as a tool to create community in educational settings. In one such case study involving 20 seven- to eight-year-old children in Australia, Mallan (1997) worked with teachers to develop a 10-week program of storytelling workshops. The workshops were intended to help the students develop communication skills and self-esteem and to create a positive classroom community. Mallan (1997) and the cooperating teachers felt storytelling helped them meet their goals of community building and skill building in the time both immediately following the workshops and in the weeks after the last workshop had ended.

In another example, Coskie, Trudel, and Vohs (2010) wrote about their experiences using storytelling to create a sense of community in a third grade classroom. They approached this task by teaching a storytelling unit in which each student learned a story that the students ultimately performed at a storytelling concert that included both family and community members. The authors wrote about witnessing “again and again how, through storytelling, students directly experience the power of narrative, creating meaningful connections with each other and with members of the community—those who are close to them as well as those who represent different cultures and generations” (p. 1). Coskie, Trudel, and Vohs (2010) found that storytelling can strengthen bonds not only between students in a classroom, but also between students and teachers and between students and members of their families and the wider community.

It has also been indicated that storytelling can act to silence people (Mallan, 1997). Mallan (1997) brought to the reader's attention the social justice side of storytelling and wrote, "it is through stories that we hear, read, and tell, that our understanding of gender, ethnicity, race, sexuality, age, creed, and class are constantly shaped and reshaped" (p. 77). Mallan (1997) encouraged teachers and the wider community to be aware of whose stories are and are not being told in classrooms and educational programs. According to Dyson and Genishi (1994), storytelling in an educational setting cannot happen in a vacuum. Indeed, storytelling can only happen where the learning environment and culture are open to the stories of diverse people and respectful of both storytellers and story listeners (Dyson & Genishi, 1994).

With the current focus in education on reading and writing it is worth noting in brief that storytelling can also impact the development of reading and writing skills across the curriculum (NCTE, 1992; Nelson, 1989; Horn, 2005). The NCTE (1992) states, "children at any level of schooling who do not feel as competent as their peers in reading or writing are often masterful at storytelling. The comfort zone of the oral tale can be the path by which they reach the written one" (para. 9). Nelson (1989) published a case study in which she discussed her use of storytelling as a springboard to encourage young children to think of their own stories to share aloud, illustrate, and write. In this way, storytelling was used as a natural bridge to bring children into the written literary sphere in an authentic and engaging way. Horn (2005), a kindergarten teacher, also wrote about the use of oral language as a precursor to writing in literacy development based on her experiences using storytelling in her classroom.

Storytelling and Theories of Learning

Numerous learning theories also support the use of storytelling as a tool for education. One of these theories is brain-based learning, which suggests teachers should teach in line with the ways brains naturally learn (Sousa, 2006). The theory of brain-based learning supports the idea that a learner's emotions affect learning, retention, and recall (Zull, 2006; Sousa, 2006; Immordino-Yang & Faeth, 2010). In fact, Zull (2006) stated that "emotion is the foundation of learning" (p. 7). In his textbook, *How the Brain Learns*, Sousa (2006) explained that the structures responsible for determining what information is stored in long-term memory are located in the emotional area of the brain, not in the rational area of the brain. According to Sousa (2006), the emotional region of the brain contains a number of structures including the thalamus, which processes incoming sensory information, and the hypothalamus, which keeps the body in homeostasis. The limbic system also includes the hippocampus, which transfers information from the working memory to the long-term memory via electrical signals. The hippocampus also plays a major role in creating meaning from the content being learned by comparing information in the working memory with stored experiences and memories. Finally, the amygdala encodes emotional messages associated with learning experiences, if an emotional aspect is present, for long-term memory storage. According to Sousa (2006), the amygdala and the hippocampus work together to ensure the learner remembers experiences that are meaningful and have an emotional component.

According to the theory of brain-based learning, the learner's emotions can impact how much attention is given to the learning situation and whether or not the learner will make meaning of and retain the information (Zull, 2006; Sousa, 2006;

Immordino-Yang & Faeth, 2010). This makes sense in light of the central role the limbic system plays in making meaning of experiences and coding memories for long-term storage (Sousa, 2006). Sousa (2006) suggested that one way to engage students emotionally in learning is by telling stories about the topic. In addition, brain-based learning emphasizes that students need a positive learning context, including a sense of physical and emotional safety, in order to be able to learn. Storytelling is one tool for creating a positive, inclusive learning community that allows students to successfully learn (Greene & Del Negro, 2010; Dyson & Genishi, 1994).

The theory of multiple intelligences is another theory that provides support for the use of storytelling in education (Trostle-Brand & Donato, 2001). Storytelling involves the whole learner—the mind, emotions, the physical body, and the spirit, in the sense that storytelling can lead to a spiritual sense that a listener is part of something larger than her/himself—allowing for all the senses to be engaged in the learning process. Indeed, in their textbook, *Storytelling in Emergent Literacy: Fostering Multiple Intelligences*, Trostle-Brand and Donato (2001) stated that storytelling allows the learner to use multiple senses to make meaning of the storytelling experience. Furthermore, Trostle-Brand and Donato (2001) discussed how storytelling can be a tool to optimize learning for learners in all eight of the multiple intelligence categories, which include the musical-rhythmic, logical-mathematical, bodily-kinesthetic, visual-spatial, intrapersonal, interpersonal, verbal-linguistic, and naturalistic intelligences. For example, Trostle-Brand and Donato (2001) suggested adding musical instruments and rhythms in the forms of refrains or basic chants in order to incorporate the musical-rhythmic intelligence into a storytelling experience. They suggested that adding these

sorts of musical and rhythmic elements can help students both anchor information in and later access the information from their long-term memories. In addition, they explained that stories appeal to students who learn through the logical-mathematical intelligence because of the natural sequencing of events and cause and effect patterns found in many stories.

Storytelling and story listening involve the bodily-kinesthetic and visual-spatial learners through the movements and physicality inherent in telling and listening to a story (Trostle-Brand & Donato, 2001). For example, according to Trostle-Brand & Donato (2001) storytellers use movements and gestures to help convey the meaning of the story. Story listeners respond physically to stories, sometimes becoming tense or gasping at exciting moments in a story or shivering during frightening moments. Strum (2000) suggested that the “storylistening trance” (Stallings, 1988, p. 6) is another type of physical reaction story listeners may experience. When in this state, a listener may have lowered and slowed breathing rates, slower blinking and swallowing reflexes, and dilated pupils.

Storytelling provides intrapersonal learners with an opportunity to develop empathy with the characters in a story and to imagine how they would feel and react in similar situations (Trostle-Brand & Donato, 2001). Both listening to and telling stories can provide a learner who learns best through the interpersonal intelligence with a chance to use this type of intelligence because storytelling is built on the interactions between the listener and the teller as they work together to co-create the storytelling experience. The storyteller has to be aware of how his/her gestures, voice, tone, and word choices are affecting the audience’s understanding of the story and their story

listening experience. Storytelling can also help a learner develop and practice the skills associated with the verbal-linguistic intelligence. According to Trostle-Brand and Donato (2001), the verbal-linguistic intelligence is often associated with the development of literacy skills and “involves the ability to listen with comprehension, speak in an articulate fashion, identify and relate word sounds, read purposefully, write and create stories and poetry, and use language and its expression” (p. 20), all of which are applicable to storytelling and listening experiences. Finally, stories about natural scientists, natural and scientific discovery, and natural themes appeal to learners who learn best through the naturalistic intelligence (Trostle-Brand and Donato, 2001).

Storytelling is also supported by the theories of multicultural education (Banks & Banks, 2005; Dyson & Genishi, 1994; Greene & Del Negro, 2010) and Indigenous education (Cheney, 2002; Sharakwy, 2008; Simpson, 2002). Banks and Banks (2005) wrote that teachers must attempt to transform their teaching styles and lessons to incorporate teaching methods that help students of all backgrounds successfully learn. Simpson (2002) suggested that using Indigenous ways of teaching, including storytelling, is one way to help learners see non-Western dominant ways of learning as valuable and to help them learn in a way that more closely matches how their cultures have traditionally learned. Sharkwy (2008) suggested that using stories, especially ones that come from non-dominant societies, can help students of diverse backgrounds feel welcomed into a learning situation and empowered to use their learning.

Another learning theory that supports the use of storytelling as a tool for learning is constructivism (Karagiorgi & Symeou, 2005; Cakir, 2008; Wiggins & McTighe, 2005). Athman and Monroe (2001) suggest educational programs, including

environmentally related programs, should be developed with current learning theories, such as constructivism, in mind. Constructivism is a learning theory which states that learners actively create their own meaning by incorporating new content and experiences with their unique prior knowledge and prior experiences. In addition, the theory of constructivism states that learning is a profoundly social task, that content must be relevant to the learner in order for learning to occur, and that multiple learning styles and perspectives should be included in learning opportunities (Karagiorgi & Symeou, 2005; Cakir, 2008); the acts of storytelling and story listening can meet all of these criteria. Constructivism is built in large part upon the work of the cognitive theorists Piaget, Ausubel, and Vygotsky (see Cakir, 2008 for more information on the development of constructivism). Cakir (2008) stated that the prior knowledge, expectations, and perceptions that students bring to a learning situation determine what information they pay attention to, make meaning of, and retain. In addition, Wiggins and McTighe (2005) suggested that making meaning out of learning by telling stories points to the true meaning of constructivism. They wrote that “a good story both enlightens and engages; it helps us remember and connect. A clear and compelling narrative can help us find meaning in what may have previously seemed to be abstract or irrelevant” (p. 89).

The use of storytelling is supported by constructivism in part because of the emphasis in constructivism on the importance of prior knowledge. As previously stated, storytelling can help activate prior knowledge, something that is crucial in order for students to be able to make meaning out of a new experience or new content (Haven, 2007; Minnesota Early Childhood Environmental Education Consortium, 2002).

According to Strauss (2006a, 2006b), storytelling can also help create the schema, or folders, in a learner's mind, which can later be accessed to make meaning when a new learning experience or situation is encountered. For example, students hearing a story about squirrels can create a schema for squirrels in their minds. Haven (2007) stated that the story structure can activate students' prior knowledge allowing the students to incorporate what they are learning about, in this case squirrels, into what they already know, even if students have no prior knowledge of squirrels. When a student hears biological facts about squirrels during a future lesson, the hope is that they will be able to access their prior knowledge of squirrels from the story experience.

In light of the research on the use of storytelling in the field of education, storytelling emerges as a powerful tool for teaching and learning. This conclusion is supported by empirical studies, case studies, and theoretical studies from the field of education. Furthermore, the use of storytelling as a powerful tool for education is also supported by numerous theories of learning, including brain-based learning, the theory of multiple intelligences, multicultural and Indigenous learning theories, and constructivism.

Because of storytelling's revival in a variety of fields since the 1970s, it is worthwhile to briefly mention the use of storytelling in the world outside of education. Two of the most prominent fields using storytelling are those of organizational management and medicine (Haven, 2007). Sunwolf, Frey, and Keränen (2005) described how "the potential power of narrative to heal is now so widely accepted that it is being used as an intervention strategy by those in the medical community" (p. 238). They indicated that people from many cultures and medical fields believe that ill people

experience beneficial effects when they have the opportunity to tell their stories.

Storytelling benefits not only those who are telling their stories, but also those who are listening, such as family members and caregivers. Storytelling is a technique also used in the medical fields of grief therapy and nursing (Haven, 2007).

The field of organizational management has also recognized the power of stories as an effective tool “to accomplish essential internal community building, to create a sense of involvement, and to instill organizational attitudes, beliefs, and perspectives in organization members” (Haven, 2007, p. 111). Silverman (2006) and the National Storytelling Network recently collaborated to publish *Wake Me Up When the Data is Over: How Organizations Use Stories to Drive Results* in which they explained how representatives from over 70 businesses from across the United States use stories to sell their products, develop their corporate culture, and make employees feel that they belong to a “family.” For more about how organizations use storytelling to meet their goals, see Silverman (2006).

Environmental Education

This section of the literature review provides a brief overview of the history of environmental education (EE) including a summary of relevant foundational documents, which describe the definitions, goals, and objectives of EE. The section then progresses to a review of the studies that have been conducted regarding the use of storytelling as a tool for teaching EE. The literature review concludes with a discussion of additional research that supports the use of storytelling as a tool for EE including a discussion of the importance of an emotional connection to the natural world, how

current guidelines for quality EE instruction and materials support storytelling as a tool for EE, and other supportive research and theories.

The history of EE in the United States has roots in the works of literary naturalists such as John Muir, Thoreau, and Aldo Leopold (Pepi, 1994). EE also has roots in the conservation movement of the 1930s and the environmental movement of the 1960s and 1970s, which culminated in the celebration of the first Earth Day in 1970 (McCrea, 2006). Various acts passed by Congress, including the National Environmental Policy Act of 1969 and the National Environmental Education Act of 1970, encouraged people to recognize their dependence on the natural environment, to conserve natural resources, and to take responsibility to help solve environmental issues (McCrea, 2006). Federal recognition of the importance of EE continued with the passage of the National Environmental Education Act in 1990 and again with more recent efforts to pass the No Child Left Inside Act (2008), an amendment introduced by Representative Sarbanes that would be attached to the Elementary and Secondary Education Act, also known as the No Child Left Behind Act (Potter, 2010).

The first issue of *Environmental Education*, which was later renamed *The Journal of Environmental Education*, was published in 1969 (McCrea, 2006), indicating an increased interest in research in the field of EE. The first definition of EE came from Stapp et al. (1969) and was published in the first issue of *The Journal of Environmental Education*. In their canonical article, the authors discussed the urbanization of the United States and the corresponding diminished interaction and association of Americans with the natural world. They stated that humans must realize their dependence on the natural world and the resources it provides and stated that EE is

“aimed at producing a citizenry that is knowledgeable concerning the biophysical environment and its associated problems, aware of how to help solve these problems, and motivated to work toward their solution” (p. 34). This definition is still widely accepted today. In addition to providing a definition of EE, the authors also provided four major objectives of EE. The objective that is directly related to this study explained that EE will help people acquire “attitudes of concern” (Stapp et al., 1969) about the environment that will in turn motivate people to solve environmentally related issues. The authors defined attitude as more than knowledge of facts. They stated that this objective “implies a combination of factual knowledge and motivating emotional concern which will result in a tendency to act” (Stapp et al., 1969, p. 35).

The Belgrade Charter (United Nations Educational, Scientific, and Cultural Organization [UNESCO], 1976) which emerged from the International Workshop on Environmental Education in Belgrade, Yugoslavia, in October 1975, also helped define EE. The Belgrade Charter (1976) argued for the need for a new global ethic which would acknowledge the relationship between humans and the natural world and would lead to attitudes and behaviors that take the health of the natural world and of all of the world’s people into account. The Belgrade Charter (1976) also discussed the need for environmental education to address the world’s environmental crises in ways that include knowledge, skills, values, and attitudes. The Belgrade Charter offered EE a goal statement that is still in use today. According to the Belgrade Charter (1976),

the goal of environmental education is to develop a world population that is aware of, and concerned about, the environment and its associated problems, and which has the knowledge, skills, attitudes, motivations, and commitment to

work individually and collectively towards solutions to current problems, and the prevention of new ones. (p. 3)

In addition to this goal statement, the Belgrade Charter (1976) also offered broad categories of objectives for EE, including awareness, knowledge, attitude, skills, evaluation ability, and participation.

The Tbilisi Declaration (United Nations Educational, Scientific, and Cultural Organization-United Nations Environment Programme [UNESCO-UNEP], 1977) came out of the Intergovernmental Conference on Environmental Education, which took place in Tbilisi, Georgia, in October of 1977. The Tbilisi Declaration further refined EE's definition, goals, and objectives for the field. (See the Definition of Terms section for the definition of EE according to the Tbilisi Declaration.) According to the Tbilisi Declaration, the goals of EE are:

- a. To foster clear awareness of, and concern about, economic, social, political and ecological interdependence in urban and rural areas;
- b. To provide every person with opportunities to acquire the knowledge, values, attitudes, commitment and skills needed to protect and improve the environment;
- c. To create new patterns of behavior of individuals, groups and society as a whole towards the environment (p. 26).

The Tbilisi Declaration (UNESCO-UNEP, 1977) also condensed the objectives for EE offered by the Belgrade Charter (UNESCO, 1975) into five categories including awareness, knowledge, attitudes, skills, and participation. In addition to refining the goals and objectives for EE, the Tbilisi Declaration contributed guiding principles to the

field of EE. One of these guiding principles related to this study stated that EE should “relate environmental sensitivity, knowledge, problem-solving skills, and values clarification to every age, but with special emphasis on environmental sensitivity to the learner’s own community in early years” (p. 27).

It is important to understand the foundations of the field of EE because, in large part, the field still follows the definitions, goals, and objectives provided by the Belgrade Charter (1975) and the Tbilisi Declaration (1977). For example, the North American Association of Environmental Education [NAAEE] used the internationally accepted goals and objectives of EE provided by the Belgrade Charter and Tbilisi Declaration (NAAEE, 2010) as the foundation for their documents, including *Excellence in Environmental Education: Guidelines for Learning (K-12)* (2010) and *Environmental Education Materials: Guidelines for Excellence* (2009), which are among the documents that currently drive efforts to ensure quality EE occurs within the United States.

Current conversations regarding the goals and objectives for EE also use many of the same goals and objectives that the field has used since the late 1970s. However, there is currently public and research interest focused on the importance of providing people of all ages, but especially youth, with opportunities to have experiences with the natural world as part of a holistic education (Potter, 2010). This interest is driven, in part, by the perception that people of all ages, including children, are now spending far less time in the natural world than they used to, that because of this people are losing their sense of connection to the natural world, and that people are therefore less interested in protecting the natural world and acting in environmentally friendly ways

(Hinds & Sparks, 2008; Finch, personal communication, October 30, 2012). Ken Finch, president of the non-profit organization Green Hearts Institute for Nature in Childhood, stated that multiple factors have led to the decrease in the amount of time children spend in the natural world including an increase in media use and structured activities for children and increased urbanization, parental fears for children's safety, and a climate of litigation (personal communication, October 30, 2012). Indeed, media use is often considered to be one of the main factors contributing to the decrease in the amount of time young people spend in the natural world (Finch, personal communication, October 30, 2012). A 2010 Kaiser Family Foundation study found that by 2010 young people aged eight to 18 increased their media consumption to an average of seven hours and 38 minutes of media per day, and that they actually packed 10 hours and 45 minutes of media use into those nearly eight hours because they often consumed more than one type of media at a time (Rideout, Foehr, & Roberts, 2010).

The movement aiming to reconnect the American citizenry with nature hopes to take advantage of the increased public and research interest in this issue (Louv, 2008). The effort to pass the No Child Left Inside Act (Sarbanes, 2008) is merely one example of the current movement. Additional examples of interest in this issue include Louv's (2005) *Last Child in the Woods* and the current interest in nature-based preschools and play areas (Green Hearts: Institute for Nature in Childhood, 2008). Additional examples of the interest in reconnected people with nature are America's Great Outdoors Initiative launched in April of 2010 by President Obama with a memorandum entitled *A 21st Century Strategy for America's Great Outdoors* (Presidential Memorandum, 2010) and the numerous articles in popular news sources from across the globe, such as the

BBC and *The New York Times*, regarding Louv's (2005) term "nature-deficit disorder" and the importance of getting children out into the natural world (see for example Black, 2012; Dell'Antonia, 2012; PRWeb, 2012).

Storytelling and Environmental Education

This section of the literature review covers quantitative, qualitative, and theoretical articles about storytelling as a tool for EE before discussing other sources of support for the use of storytelling as a tool for EE. The majority of the studies that have been conducted specifically about the use of storytelling within the field of EE are qualitative studies, usually exploratory or ethnographical in nature, and theoretical articles. Hadzigeorgiou, Prevezanou, Kabouropoulou, & Konsolas (2011) conducted a quantitative study regarding storytelling as a tool for EE in a southern European city. Hadzigeorgiou et al. (2011) studied the effect of storytelling on kindergarten-aged children's retention of information about the importance of trees and on the children's intention to participate in a tree planting activity. They compared children that heard a story about the importance of trees told aloud in a traditional oral fashion with children who heard an adult talk about trees in a developmentally appropriate manner while showing pictures about why trees are important to humans. 159 children participated in the study and were randomly split into either the storytelling group or the expository teaching group.

Hadzigeorgiou et al. (2011) conducted pre-tests of the children's prior knowledge of the importance of trees and their intention to participate in tree planning activities and they conducted post-tests on both topics with both groups one week after the treatment. The delayed post-test for the children's intention to join in a tree planting

activity was conducted seven weeks after the treatment and the delayed post-test assessing the children's retention of the introduced ideas about the importance of trees was conducted eight weeks after the treatment. During the pre- and post-tests, children were asked, in exactly the same way for each assessment and for each child, to tell the researcher why trees are important to people and themselves and to tell which of a list of activities they would pick to do on a Sunday. During the delayed post-test, children were also asked to draw a picture of what they heard about trees during the treatment and then to explain what they drew to the researcher. The drawing activity was intended to assess children's understanding of the ideas that had been introduced during the treatment.

Hadzigeorgiou et al. (2011) found more children in the storytelling than in the expository teaching group indicated an intention to participate in a tree planting activity, even during the delayed post-test seven weeks after the treatment. The authors also found storytelling to be more effective than expository teaching for helping children remember the information about the importance of trees that was introduced in the treatment. Results indicated the storytelling approach was effective for helping children remember ideas about the importance of trees ($p < 0.01$). This study supports the work of other authors and researchers who have identified storytelling as an effective way to improve retention of the story itself and of the content included within the story (Schank, 1990; NCTE, 1992; Janner, 1994; Wiggins & McTighe, 2005).

Bizard and Schuster (2007) explored the power of storytelling as a tool to foster children's connection to a natural place. Bizard and Schuster (2007) conducted their study from the assumption that children who develop a bond with nature will care about

the environment and about their impact on the environment as they grow into adults. They also worked from the assumption that storytelling can create bonds between a story listener and the place in which and about which the story is told (Basso, 1996). This study investigated not only the effects of storytelling for helping children develop a connection with the study site, but also examined differences between telling natural history versus cultural history stories. Six groups of fourth and fifth grade students participated in the study for a total of 122 participants. Two groups listened to cultural history stories about the former inhabitants of the site, including stories about what the peoples' lives were like and how they used the land. Two groups listened to natural history stories about the site's flora, fauna, geology, and ecology. The final two groups were not told any stories and acted as the control. Researchers collected writings from students describing what they did at the site and how they felt about the site while still on site, interviewed students one week after both site visits, and took field notes while each group was at the site.

The results indicated that children in all six groups developed an attachment to the study site. However, the authors found differences in the types of attachment the children in the two different storytelling groups developed. Bizard and Schuster (2007) concluded "cultural history stories served to enhance children's historical recognition of place" (p. 193) and made the site more exciting to students. For example, children were fascinated with the fact that farmers had once occupied the land and that there had been fields where there was now forest. However, the sense of place children developed after hearing cultural history stories was found to be "static, anthropocentric, and localized" (Bizard and Schuster, 2007, p. 194) and had little impact on how the children interacted

with the natural world of the site during their free exploration time following the storytelling. By contrast, the natural history stories “promoted the development of biocentric place meanings” (p. 195) and seemed to encourage students to become actively engaged with the site. The authors suggested natural history stories may encourage place attachment on a larger scale that might also apply to other natural areas, rather than just to the site that the children visited. Bizard and Schuster (2007) concluded that educators can use natural history stories combined with a smaller amount of cultural history stories to help children develop a sense of place.

Payne (2010) also used stories as a tool to get people to develop connections with the land. In particular, he used stories about looking for gnomes to engage program participants in natural places in Australia. Payne (2010) suggested stories, such as the gnome stories he tells, are successful in getting a wide range of audiences to engage with natural areas and to “reimagine” their relationship with nature. According to Payne (2010), “the experiential nature of on-site” (p. 306) storytelling is powerful and can move people towards developing a connection with the natural world. Payne (2010) also stated that feedback he has received from participants suggests participants remember this powerful storytelling experience for many years after the experience itself.

Tooth and Renshaw (2009) used a yearlong case study in eight elementary schools as the basis for an article about developing a sense of connection with the natural world through a combination of “environmental narrative, drama, and deep reflection” (p. 95). The authors explored the results of a yearlong project they created, called The Storythread Values Project, which was based on the successful work done by

Storythread, an environmental drama company based in Australia. The project focused on using environmental stories and drama to help students develop positive values about and a sense of connection with the natural world.

The authors used story in three ways in their values-based project. First, due to the powerful and engaging nature of the story, students were both cognitively and emotionally engaged with the characters in the story. This engagement allowed for teachers and students to have meaningful discussion about the values and actions of the characters in the stories. Second, the stories were used as an entry point for students to reflect on their own values; students compared the characters' values and actions with their own. Third, the stories were used as a context for asking students to go out into the natural world near their school to explore, observe, and build connections to the natural world with an intentional sense of reflection and attentiveness. The students then linked their thoughts and experiences back to the adventures of characters in the stories to further reflect on their experiences. In conclusion, the authors stated that all education, both mainstream and EE related, should engage people with the natural world in "practical, emotional, and deeply attentive ways that can draw them into the thinking, values, and actions of sustainability" (Tooth & Renshaw, 2009, p. 102). Tooth and Renshaw (2009) also concluded that a mixture of story, drama, and deep, guided reflection and discussion of the topics under study can impact people with all of their senses, thus leading to deep learning and understanding.

Storytelling can be used at a variety of different points in a lesson or experience. For example, Strauss (2006a) recommended several specific times to use environmental stories in lessons including using stories as an opener to begin a lesson, as an

opportunity to hook students into the content, and as a way for students to activate prior knowledge related to the topic. Stories can also be told at the end of a lesson as an emotionally charged closer that will encourage students to make personal meaning from the lesson. Finally, stories can be told at transition times and times of rest within a lesson, such as when a class is taking a break in the midst of a hike. Strauss (2006a) wrote that stories used during these transition or rest times can encourage students to think about a topic in a new way and “can give their “logical/mathematical” brains a rest while they use their “auditory” and creative intelligences” (p. 30).

In *Natural wonders: A guide to early childhood education for environmental educators*, the Minnesota Early Childhood Environmental Education Consortium suggested that stories can be used to welcome young children to the unfamiliar environment of a nature center, to generate interest in a topic, or to provide closure for an activity or experience. The guide also suggested that storytelling is a developmentally appropriate component of EE programs for young children, as are picture books and other forms of stories.

Strauss (2006a) developed the definitions of environmental story and environmental storytelling used as the nominal definitions for this study. Strauss explained that he developed these definitions after realizing there was neither a clear definition of an environmental story nor clear guidelines about what makes a story effective for EE purposes (2006a; personal communication, November 12, 2012). He also wanted a definition of environmental stories which included both Native American stories and stories from other cultures. Thus, Strauss created his own definition, which can be found in Chapter One, from over 20 years of experience “working as a naturalist,

storyteller, and storytelling naturalist” and based on the “message or content of the stories, rather than the cultures that first told them” (personal communication, November 12, 2012). Strauss (2006a) wrote that stories help people of all ages connect to and care about the natural world and can complement scientific understanding of the natural world.

Nanson (2005) wrote about the power of oral storytelling as a tool to reconnect people to nature for the Society for Storytelling of the University of Glamorgan in Wales. Nanson (2005) suggested that storytelling can help people feel a sense of respect for the natural world, can help people develop an emotional interest in the natural world that can lead to the development of cognitive interest, and can help the audience feel empathy for the perspectives of other cultures and of the whole of the natural world. Nanson (2005) stated that “many ecological storytellers’ primary objective—upon which the effective conveyance of knowledge depends—is to elicit a sense of connection: an emotional investment in the locality where the storytelling takes place, so that people will care what happens to it” (p. 25-26).

Wattchow and Brown (2011) also wrote about storytelling as a tool for helping people develop a connection with the natural world. They described the four characteristics of what they call a place-responsive pedagogy for outdoor education, one of which is the intentional use of place-based stories. Wattchow and Brown (2011) suggested that multiple types of stories contribute to the overall story of a place including stories of the peoples, geography, natural and cultural history, and even political history and land use. According to Wattchow and Brown (2011) stories and storytelling are powerful, effective, and appropriate tools to help people intentionally

develop relationships with places. In fact, they declared that outdoor educators have the responsibility to become storytellers of the places where they teach. “In place-responsive outdoor education telling stories, or facilitating others’ stories, that connect nature and culture becomes part of the responsibility of being with people in outdoor places” (Wattchow & Brown, 2011, p. 189). In combination with knowledge and direct experience, Wattchow and Brown (2011) suggested that stories can help people feel a sense of belonging in a natural place. And, they wrote that “with belonging comes connection and the development of an ethic of care” (p. 196).

Nanson (2005) and Wattchow and Brown’s (2011) statements about the importance of an emotional connection to nature echo the foundational documents of EE (Stapp et al., 1969; UNESCO, 1975; UNESCO-UNEP, 1977), many of which mentioned the importance of an emotional, or affective, connection with the natural world. Throughout the literature within the field of EE there has been agreement about the importance of an emotional connection to the natural world (Iozzi, 1989a, 1989b; Hungerford & Volk, 1990; Pepi, 1994; Kals, Schumacher, & Montada, 1999; Pooley & O’Conner, 2000; Sward & Marcinkowski, 2001; Hinds & Sparks, 2008; Müller, Kals, & Pansa, 2009; Cheng & Monroe, 2012). Some researchers argued that an emotional connection to the natural world is a precursor to developing environmentally literate citizens (Sward & Marcinkowski, 2001) and citizens who act in pro-environmental ways (Hinds & Sparks, 2008; Kals, Schumacher, & Montada, 1999; Pepi, 1994; Pooley & O’Connor, 2000; Wattchow & Brown, 2011), though some would disagree with such strong statements (Ballantyne & Packer, 1996). Different researchers have had different names for this emotional connection to nature, including environmental sensitivity

(Hungerford & Volk, 1990), nature appreciation (Pepi, 1994), emotional affinity toward nature (Kals, Schumacher, & Montada, 1999; Müller, Kals, & Pansa, 2009), affective connection (Hinds & Sparks, 2008; Iozzi, 1989a, 1989b), and connectedness to nature (Mayer & Frantz, 2004; Cheng & Monroe, 2012). Many of these authors stated positions similar to Hinds and Sparks (2008), who wrote that an emotional connection with nature may “lead to positive psychological well-being and to the formation of positive attitudes and behaviors towards the natural environment” (p. 110).

Despite the agreement on the importance of an emotional connection with nature, the field of EE has focused more on the cognitive aspects of changing behavior during the last 20-30 years. That is, programs focused on building knowledge and problem-solving skills in participants. This idea came out of the assumption that an increase in knowledge would lead people to care about an issue and to work to try to solve the issue (Cheng & Monroe, 2012). Hungerford and Volk (1990) suggested that this assumption, namely that an increase in knowledge leads to changes in attitudes towards the environment thereby leading to changes in pro-environmental behaviors, is not supported by research in the field. Hungerford and Volk (1990) acknowledged environmental sensitivity as one critical component of EE programs in their revised goals for EE, which, nonetheless, still focused more on imparting knowledge and skills to the learner. The field continued to stress knowledge and problem-solving skills in their goal statements and objectives even as researchers continued to investigate the importance of an emotional connection with the environment. It is important to note that while there may be disagreement about which domain, cognitive or affective, is more important, there *is* agreement within EE research that programs must provide activities,

information, and opportunities that impact both the affective and the cognitive domains (Iozzi, 1989b; Hungerford & Volk, 1990; Ballantyne & Packer, 1996; Wattachow & Brown, 2011). Wattachow and Brown (2011) expressed this position well when they wrote that “what is needed is both a felt, embodied encounter with a place and an engagement with knowing the place through various cultural knowledge systems, such as history, ecology, geography, and so on” (p. 190). However, numerous authors seemed to agree with Iozzi (1989a) that the “affective domain is the “key” entry point to the teaching-learning process” (p. 3).

According to Ken Finch, president of the non-profit organization Green Hearts Institute for Nature in Childhood, there are now people entering EE programs or classrooms who have no emotional attachment with nature because they may never have spent time in nature (personal communication, October 30, 2012). Wilson (2012) would agree and wrote that “many children come to school and other educational settings (e.g. nature centers, etc) with little or no direct experience with natural environments” (p. 65). According to Finch, these children are entering EE programs as purely cognitive beings who will remember environmental information for only a short while because they have no cause to remember it. Finch stated that the field of EE cannot focus only on the cognitive domain in programs. Instead, EE must provide opportunities for people of all ages, but especially children, to develop an emotional connection with nature before they can be expected to care about developing a sustainable society, act in environmentally friendly ways, or have the motivation to learn factual information about the natural world (personal communication, October 30,

2012). As previously described, storytelling can be one powerful tool to help EE meet the goal of beginning to develop a connection with the natural world.

According to Jacobson, McDuff, and Monroe (2006), “storytelling can teach vital conservation lessons and inspire environmental action” (p. 139). Storytelling can also help participants begin to develop an emotional connection to the natural world (Basso, 1996; Bizard & Schuster, 2007; Henderson, 2005; Nanson, 2005; Payne, 2010; Strauss, 2006a; Tooth & Renshaw, 2009). Storytelling can help the content, or cognitive information, shared in EE activities and programs, become meaningful and relevant to learners (Egan, 1989; Ollerenshaw, 2006; Mallan, 1997; Shank, 1990; Strauss, 2006a) so that there will better chance that they will retain the information (NCTE, 1992; Egan, 1989; Hadzigeorgiou et al., 2011; Haven, 2007). In part this relevance and meaning could come from a story’s ability to activate a learner’s prior knowledge (Mallan, 1997; Schank, 1990; Ollerenshaw, 2006). All of these elements (relevance, meaning making, emotional connection, activation of prior knowledge, environmental action and pro-environmental behaviors) are among the goals for EE programming and materials that are also supported by the *Guidelines for Excellence* (2009) and *Guidelines for Learning* (2010) produced by the NAAEE. These documents currently help to guide efforts to ensure that high quality EE is offered in the United States.

In addition, the NAAEE (2009) *Environmental Education Materials: Guidelines for Excellence* supports the use of teaching methods and styles that create an effective learning community and meet the needs of diverse learners, including learners from Indigenous backgrounds. Storytelling can create a sense of community (Coskie, 2010; Dyson & Genishi, 1994) within a community itself or in a classroom or learning

environment. This sense of community can help learners feel safe, accepted, and valued, and thus able to extend the sense of community into the wider natural world through pro-environmental actions (Nanson, 2005). Storytelling can be a tool for helping members of society who have traditionally felt excluded from mainstream, Western educational practices, including EE, feel that they are welcome and that their cultures and contributions are valued in educational settings (Cheney, 2002; Sharkawy, 2008; Simpson, 2002). According to Cheney (2002),

stories within the dominant Western paradigm of environmental education are merely tools for educating students up to (what is thought to be) the real thing: a proper scientific understanding of the land-community and the ethic that follows from this understanding. Stories within First Nations cultures, on the other hand, are the real thing. (p. 97)

CHAPTER 3

Methodology

Purpose Statement

The purpose of this exploratory study was to investigate how oral storytelling both is being used and can be used as an effective tool for teaching EE. Environmental education practitioners and researchers can apply findings from this study to their work and scholarship within an EE context.

Research Questions

Interviews with seven professional storytellers provided qualitative data to address the following research questions, which were crafted using Creswell's (2009) guidelines for creating qualitative research questions that convey an emerging design:

1. How are professional storytellers currently using storytelling as a tool for EE?
2. What are professional storytellers' perceptions about what makes storytelling effective for teaching EE?

Characteristics of Qualitative Research

This qualitative study explored the use of storytelling as a tool for teaching EE using qualitative methods for a variety of reasons. Patton (2002) explained “qualitative inquiry can be used to discover, capture, present, and preserve the stories of organizations, programs, communities, and families” (p. 196). This description makes a qualitative approach seem very appropriate for research that was, first and foremost, to present the story of storytelling as it is currently used for EE purposes by the seven

professional environmental storyteller participants. Another reason for selecting a qualitative design was the intended audience. According to Patton, all choices about the design for a study take the audience into consideration, but in a qualitative study the intended audience deserves special consideration. The intended audience for this study included environmental educators, storytellers telling stories in environmental education contexts, interested members of the EE field, and the public (for example, teachers). The nature of the intended audience suggested an interest in the power of understanding a topic with more depth, complexity, and richness than a quantitative design might provide. As Patton wrote, “some questions lend themselves to numeric answers; some don’t” (2002, p. 13). The presumed nature and preferences of the intended audience for this study made the choice of a qualitative method appropriate for this particular study.

Another reason for choosing a qualitative research design for this study was the researcher’s own background and interest. According to Patton (2002) the researcher’s own interests are a valid reason for conducting a study. As a practicing environmental educator, the researcher desired to further explore the use of oral storytelling as a tool for EE because it was a teaching method that she already used and had observed being intentionally and powerfully used by other environmental educators.

Before describing the particular methods that were used in this study there are a number of characteristics of qualitative research that are important to understand. Creswell (2009) defined qualitative research as a way to understand the meaning that a person or people give to an issue and Patton (2002) wrote that qualitative methods allow an issue to be explored in detail and with a depth that quantitative methods may not allow. The end goal of qualitative research is not to generalize the findings to a broader

population, but to explore a topic in depth often using the words of the participants themselves.

Because the goal is a deep, multi-faceted understanding of a topic, qualitative research can use an emergent design. According to Creswell (2009) an emergent design means that the process may shift at any time from the original research plan. Shifts in the research plan may include aspects of the questions, the form of data collection, and even changes in the individuals selected to participate in the study. In addition, in an emergent design, the researcher takes the data and analyzes it from the bottom up, looking for patterns to emerge. In addition, according to Patton (2002), “direct quotations are a basic source of raw data in qualitative inquiry, revealing respondents’ depth of emotion, the ways they have organized their world, their thoughts about what is happening, their experiences, and their basic perceptions” (p. 21). In order to capture this rich and complex data, qualitative research uses open-ended questions as a tool of inquiry. The use of open-ended questions lets a participant share his/her thoughts, experiences, and point-of-view with fewer restrictions. This is in direct contrast to quantitative research in which participants often select an answer to a pre-determined question from a pre-selected list of responses.

Another important characteristic of qualitative research is the role of the researcher. In Patton’s (2002) words, “in qualitative inquiry, the researcher is the instrument” (p. 14). As Creswell (2009) further explained, in qualitative research the researcher is the one actually gathering the information, though he/she may use an instrument to help collect the data. This is in marked difference to quantitative research where, according to Patton (2002), the instrument, such as a survey, is the focus.

Another defining difference between quantitative and qualitative research is sampling. Patton (2002) wrote that nowhere is this difference captured better “than in the different strategies, logics, and purposes that distinguish statistical probability sampling from qualitative purposeful sampling” (p. 46). Patton (2002) further explained that probability sampling allows for generalization while purposeful sampling leads to the selections of “information-rich cases,” or participants who will provide in-depth, rich data about the topic under consideration. According to Hycner (1985), within qualitative research “part of the “control” and rigor emerges from the type of participants chosen and their ability to fully describe the experience being researched” (p. 294).

Strategy of Inquiry

These general characteristics of qualitative social science research lead into a discussion of the specific strategy of inquiry that was used in this study. This phenomenological study aimed to explore how environmental storytellers make sense of the experience of storytelling in an EE context. As Patton (2002) explained, the focus in a phenomenological study is on “methodologically, carefully, and thoroughly capturing and describing how people experience some phenomenon—how they perceive it, describe it, feel about it, judge it, remember it, make sense of it, and talk about it with others” (p. 104). Patton continued to explain that a phenomenological study aims to identify the essence of what is being studied, in this case the essence of using storytelling as a tool to teach EE, through analysis of the data gathered from participants.

The Role of the Researcher

In qualitative research the researcher is the instrument of data collection, as such it is important for the researcher to share relevant background information in order to identify biases and values brought into the study by the researcher. The researcher grew up in a neighborhood steeped in the magic of storytelling; just down the street lived a professional storyteller who emigrated from Norway. All throughout the researcher's childhood she listened to her neighbor tell Nordic tales in which ugly and devious trolls, evil spirits, mountain landscapes, and clever and brave princes and princesses came alive in the telling. The mystery and art of these stories, even the cadence of the storyteller's speech, has stuck in her head all these years. The researcher also grew up sitting around the kitchen table hearing her parents' stories of growing up on the farm and stories of her ancestors traveling from their home lands to make new lives in the United States.

When the researcher began working as an environmental educator at a residential environmental learning center (RELC), she had the opportunity to realize that she, too, could be a storyteller. For the first time in her teaching career she was required to tell a story as part of a class, in this case, on the topic of Ojibwe heritage. Not only did the researcher-storyteller have the opportunity to practice learning and telling a story, she also got to tell it to different audiences week after week and refine how she told the story. The researcher found it fascinating to observe her own progression towards telling ever more compelling stories. At the same time, she was lucky to have colleagues that modeled the use of storytelling as a teaching method in a variety of the classes taught at the RELC, including classes about white-tailed deer,

birds, beavers, forest ecology, and many other topics. The researcher had the opportunity to observe how they used stories in their classes and how students of all ages responded to the stories. During this time the researcher also had the opportunity to have storytelling mentoring sessions via the telephone with a professional storyteller who made her living telling stories in communities around Minnesota. The researcher was hooked by the magic and possibility of storytelling and began using stories as an intentional teaching tool in classes at the RELC and on wilderness trips with youth. As the researcher progressed through this study, she constantly attempted to clarify and bracket her own biases, as recommended by Creswell (2009) and Hycner (1985). Thus, it is important for the reader to understand that both telling and listening to stories brings the researcher joy and that she feels it to be a powerful teaching tool in her own EE and teaching practice, even as she attempted to set aside her own views during the course of this study. It is also important to note that some of the information-rich participants were selected based on the researcher's knowledge of their use of storytelling as a tool for teaching EE.

Data Collection Procedures

Setting.

The study was conducted through interviews via either the telephone or the Skype video conferencing system. Video conferencing allowed the researcher to observe and record facial expressions, gestures, and other movements made by the storyteller during the interview. Three participants consented to conducting the interview via the Skype video conferencing system. The other four participants were uncomfortable either with conducting the interview while being video recorded or with

the technology needed to operate the Skype system. Thus, four interviews were audio, but not video recorded. The interviews were conducted in the researcher's home office while the participants spoke from their home or work offices.

Purposeful Sampling—Information-Rich Cases.

This qualitative study relied on purposeful sampling, which meant that a relatively small number of participants, seven in total, were purposefully selected to participate in the study. The participants were deemed to be “information-rich cases” (Patton, 2002, p. 230), that is, they were deemed to have experience and information to share that directly related to the topic under study. The participants in this study were professional storytellers who use oral storytelling intentionally for the purpose of EE and who had the experience to offer valuable insights regarding how to use storytelling effectively to teach EE. The definition of professional storyteller was operationalized as someone who considered him/herself to be a professional storyteller.

Ethical Considerations.

While storytelling is not a topic of study that immediately brings to mind issues of ethics, it is still important to protect the participants. As Babbie (2011) wrote, “all forms of social research raise ethical issues” (p. 322) when the researcher is in direct contact with the participants asking them to speak about their inner thoughts. Both the questions used in the interviews and the research plan were submitted to the University of Minnesota-Duluth Institutional Review Board (IRB). The IRB determined that this study did not need to be approved by IRB because the researcher was speaking to experts about their area of expertise. Participants in this study were given information about the study before being asked to provide oral consent for the interview and for

audio or video recording of the interview, as recommended by Creswell (2009). In order to further protect participants' privacy, all participants are referred to as Participant (P) followed by a number throughout Chapters Four and Five. For example, the first participant to be interviewed is referred to as P1 throughout the data analysis and discussion, the second as P2, and so forth.

Interview Approach.

Qualitative interviews were conducted with the participants during the course of this study via the Skype video conferencing platform or via the telephone. A general interview guide approach combined with standardized open-ended questions (Patton, 2002) was used during the interviews in order to provide a framework in which participants could share their thoughts and experiences while still specifying questions that each participant should answer. Specifying certain key questions exactly as they were to be asked ensured that each participant answered key questions and helped control for the researcher's novice status as a social science researcher (Patton, 2002). Other strengths of this approach included that the questions developed using this approach are now available to those who will read the study, that the time spent in the interview was efficiently focused on the specific topic of interest, and that participants answered many of the same questions, making responses easier to analyze during the data analysis phase (Patton, 2002). The major weakness of the standardized approach is that, according to Patton (2002), it doesn't allow the researcher to deviate from the questions specified in the standardized question guide in order to ask additional questions, for example about a particularly interesting or confusing response. This weakness of the standardized approach was mitigated by following a pre-determined set

of interview questions with questions regarding participant responses and additional questions allowed and encouraged. The interview questions were pilot tested with a professional storyteller familiar to the researcher. Based on the pilot test, adjustments were made to the interview questions before use with the interview participants. See Appendix A for a copy of the interview guide used in this study.

Data Recording Procedures.

An interview protocol was used to record a participant's answers to the questions asked during the qualitative interview. The interview protocol included information such as the date, time, interviewee number, questions to be asked, additional probes for the standardized questions, and room to record both answers to the questions (Creswell, 2009) and gestures, movements, and other non-verbal reactions of the participants (Hycner, 1985). The researcher took notes during the interviews on the interview protocol. As previously stated, the interviews were audio or video recorded. The recording system used was the password protected Camtasia Relay recording system provided by the University of Minnesota. The processed audio and video recordings of the interviews were stored securely on the password protected University of Minnesota's Media Mill website.

Data Analysis

Data was analyzed following the steps suggested by Bloomberg and Volpe (2008) for qualitative data analysis (see Figure 1) with additional suggestions for data analysis from Creswell (2009) and Hycner (1985). First, the researcher formatted each video and audio recording using the Media Mill software provided through the

University of Minnesota so that it could be imported into the Express Scribe transcribing software.

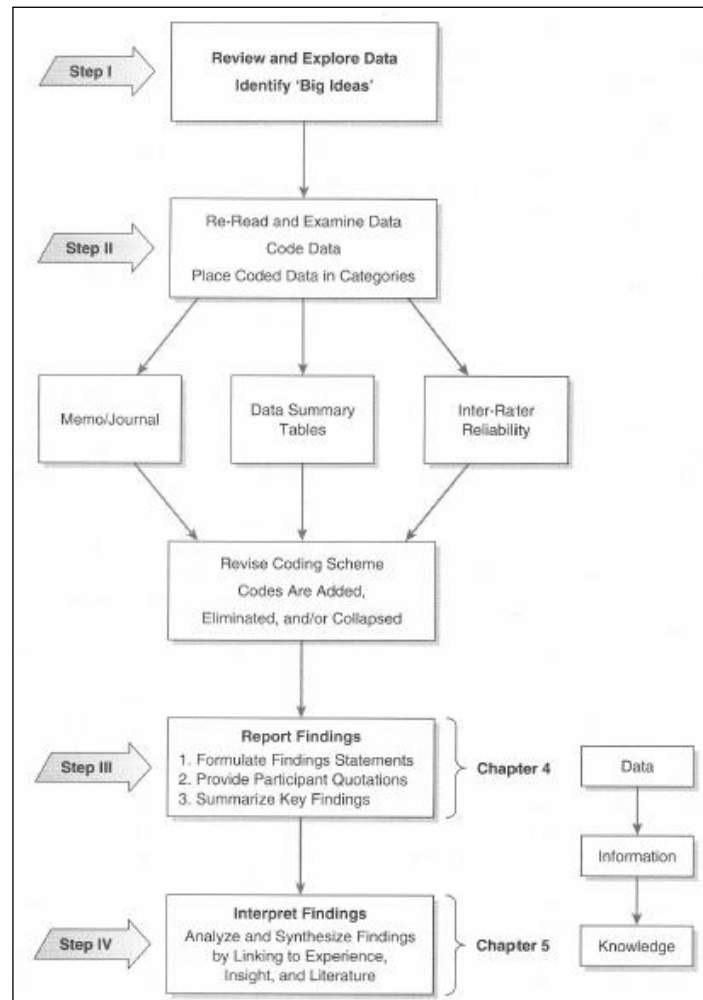


Figure 1. Process of qualitative data analysis. Bloomberg & Volpe, 2008, p. 100

The researcher next prepared the raw data by transcribing all interviews and field notes. As recommended by Hycner (1985), the researcher transcribed all gestures, non-verbals, and voice and speech patterns, such as pauses or emphasis placed on certain words, that were recorded in the video and audio recordings or in the researcher's field notes. In order to increase reliability, the researcher then listened to each interview while reviewing the transcripts to identify and correct any errors. At this

point the researcher, following the suggestion of Hycner (1985), wrote a memo listing her own pre-suppositions regarding the power of oral storytelling as a tool for EE in an attempt to set aside her own biases so that she could enter into the world of each participant as much as possible when she read through and coded the interviews. Coding and memoing was conducted in QSR's NVivo 10 software system for qualitative analysis.

Following the initial read-through of the data, the researcher wrote a memo regarding her first impressions of the general, or big, ideas found in the data (Bloomberg & Volpe, 2008). The researcher then re-read and examined the data and began to assign codes to units of meaning as they emerged from the transcripts. Bloomberg and Volpe (2008) wrote that these segments or units of meaning can be "single words, phrases, sentences, or even whole paragraphs" (p. 102) and the researcher coded units of meaning from all four of these categories. Whenever possible, the name for a code was taken from a participant's own words (Creswell, 2009; Bloomberg & Volpe, 2008; Hycner, 1985). At this point in the data analysis process all units of meaning were coded with the openness advocated by Hycner (1985), meaning that codes were given to all units of meaning including redundant ones and those that did not directly address the research questions. Each time the researcher created a new code she recorded the definition of the code. As units of meaning emerged, the researcher constantly referred to these definitions in order to monitor for drift of codes (Creswell, 2009). After concluding this read-through and coding of each participant's interview, the researcher wrote a memo regarding her initial impressions of both the big ideas and the unique ideas that emerged from the interview (Bloomberg & Volpe,

2008). After coding each interview, the researcher next re-read the data and revised her coding schemes by adding, deleting, and combining codes. During this phase the researcher removed codes not relevant to the research questions and again monitored for drift of codes by referring to the recorded definitions for codes.

At this stage “inter-rater reliability” (Bloomberg & Volpe, 2008, p. 103) was recommended; an impartial colleague was invited to review several of the transcripts to determine if the researcher’s codes were “appropriate and relevant to the research questions” (Bloomberg & Volpe, 2008, p. 103). The impartial reviewer was chosen because of his familiarity with both qualitative research methods and the world of oral storytelling. Any discrepancies in coding were easily resolved. The researcher next inductively organized coded data into subthemes, or subcategories, and into themes. According to Creswell (2009), themes are categories that “should display multiple perspectives from individuals and be supported by diverse quotations and specific evidence” (p. 189). As recommended by Creswell (2009), each the theme was indeed supported by direct quotations from the participants. Negative or discrepant cases were also identified and are explained in Chapter Four. At this stage, participants were given the chance to comment on the themes and subthemes through the process of member checking (Hycner, 1985). This means that participants were given the opportunity to comment on whether the researcher’s portrayal of what they said matched what they meant. Participants’ comments were taken into account and edits were made.

Reporting the Findings

The findings of the study are reported in Chapter Four in a manner that conveys the essence of the data and the lessons learned from the data (Creswell, 2009). Due to

the nature of the intended audience, the findings are reported in a rich, narrative, and descriptive style full of direct quotations from the participants explaining their perspectives on how they are using storytelling as a tool for EE and what they perceive makes storytelling effective for use in EE.

Reliability and Validity

It is important to consider how qualitative and quantitative data differ in regards to reliability and validity. As Patton (2002) wrote, “the validity, meaningfulness, and insights generated from qualitative inquiry have more to do with the information richness of the cases selected and the observational/analytical capabilities of the researcher than with sample size” (p. 245). Bloomberg and Volpe (2008) refer to reliability in qualitative research as dependability, which “refers to whether one can track the process and procedures used to collect and interpret the data” (p. 78). Steps to ensure dependability in this study included checking transcripts for mistakes, checking for drifts in the meaning of codes, and having an impartial colleague check transcripts for appropriateness and relevance of codes. In addition, the researcher provided a detailed description in Chapter Three of how she collected and analyzed the data in order to provide an “audit trail” (Bloomberg & Volpe, 2008, p. 78) and to offer her data and analysis procedures to other researchers for review.

In qualitative research, validity is measured by the degree of accuracy of the findings from the standpoint of the participants and the researcher (Creswell, 2009; Hycner, 1985). Bloomberg and Volpe (2008) refer to this as credibility, which “parallels the criterion of validity...in quantitative research” (p. 77) and which “refers to whether the participants’ perceptions match up with the researcher’s portrayal of

them” (p. 77). Thus, the researcher implemented suggestions from Creswell (2009), Bloomberg and Volpe (2008), and Hycner (1985) to ensure the credibility of the findings. First, the researcher triangulated the data by developing themes based on the convergence of perspectives from multiple participants. According to Creswell (2009), triangulating data in this manner can increase the study’s validity. Secondly, the researcher used the process of member checking, a process in which she provided the participants with an opportunity to determine “whether the findings are valid for them” (Hycner, 1985; p. 297). Third, the researcher identified the bias that she brought to the study and to the interpretation of the data by bracketing her biases through memoing. Finally, the researcher presented “negative or discrepant information that runs counter to the themes” (Creswell, 2002, p. 192) in order to add to the credibility of the findings.

Generalizability

In accordance with the characteristics of qualitative research, the researcher did not at any point expect the findings from this study to be generalizable to a wider audience in the same way that the findings from a quantitative study conducted with probability sampling are generalizable to a wider audience. However, the researcher expected that practitioners such as environmental educators, storytellers, and teachers might be able to apply selected findings to their own unique storytelling and EE situations.

Bloomberg and Volpe (2008) refer to generalizability in qualitative research as transferability. According to Bloomberg and Volpe (2008) transferability “refers to the fit or match between the research context and other contexts as judged by the reader” (p. 78). Transferability of this study was enhanced by the inclusion of “thick, rich

description” (Creswell, 2009, p. 191). According to Creswell (2009), “rich, thick description” may include both descriptions that make the reader feel that they are part of the setting and discussion and multiple perspectives about the themes that make the discussion feel “more realistic and richer” (p. 192). These characteristics can help a reader decide if and how the findings of the study could be transferred to her unique setting.

CHAPTER 4

Results

Overview

The purpose of this exploratory, qualitative study was to investigate the ways in which professional storytellers are currently using storytelling as a tool for EE and to investigate their perceptions about what makes storytelling or stories effective for EE.

Interviews with seven professional storytellers provided qualitative data to address the following research questions:

1. How are professional storytellers currently using storytelling as a tool for EE?
2. What are professional storytellers' perceptions about what makes storytelling effective for teaching EE?

This chapter proceeds with a general description of the study participants, including basic demographics. The chapter then presents key results for each of the research questions in the form of themes and subthemes that emerged from the analysis. Each subtheme is supported by direct quotations from participant interviews. As suggested by Bloomberg and Volpe (2008), throughout the findings the researcher aimed to include quotations that illustrate the perspectives of multiple participants as well as quotations that give the reader a sense of the complexity and the variety of perspectives regarding the issue. No conclusions or implications of the data are presented in this chapter; all discussion of the findings can be found in Chapter 5.

Study Participants

Seven storytellers participated in semi-structured interviews (Patton, 2002) for this study. Five of the seven participants were male and two participants were female. In order to protect the identities of the study participants all participants are referred to as male throughout Chapters Four and Five. For example, the pronouns “he” and “his” are used. To further protect the identities of the participants, all participants are referred to as Participant (P) followed by a number. For example, the first interview participant is referred to as P1, the second as P2, and so on. All seven participants were over approximately 40 years of age. All seven participants were from the eastern half of the United States, including the states of Illinois, Massachusetts, Minnesota, New York, and Oklahoma. Participants had been telling stories as professional storytellers for an average of 23 years with a range of between 4 and 38 years as a professional teller. These participants were selected because the researcher felt they would have a wealth of thoughts and experiences to share regarding the use of oral storytelling for EE purposes and because they met the criteria for study participants.

Findings—Research Question 1

The findings of this study are presented by research question. Findings for the first research question regarding how professional storytellers are using oral storytelling as a tool for EE are presented first. Findings for the second question regarding storytellers’ perceptions of what makes stories effective for EE purposes then follow.

The key findings for the first research question fall into three broad categories:

1. The storytellers in this study are using storytelling in four primary ways: to connect, to inspire, to motivate, and to teach science.

2. Storytellers are telling stories to a variety of audiences that range from preschoolers to PhD aquatic ecologists to groups of senior citizens.
3. Storytellers are using many types of stories in their storytelling programs and performances including, among many others, cultural and natural history stories and positive real-world stories of what how people are making a difference for the environment.

Finding 1: The storytellers in this study use environmental storytelling in four primary ways: to connect, to inspire, to motivate, and to teach science

Table 1

Research Question 1: Finding 1 Themes and Subthemes

Theme	Subthemes
1) Connection	I) Connect people with the natural world II) Connect communities III) Connect people with the wider universe
2) Inspiration	I) Inspire a sense of appreciation for the natural world II) Inspire people to care III) Inspire people to take action IV) Inspire attitude change V) Inspire the search for more knowledge VI) Inspire discussion after the story
3) Motivation	I) Motivate hands-on science II) Motivate other EE storytellers
4) To Teach Science	I) To transmit knowledge II) EE concepts in stories III) To teach science process skills IV) Stories are the hook V) Abstract to concrete

The seven storytellers in this study described four primary ways in which they use storytelling as a tool for environmental education: to connect and to inspire people, to motivate people to learn, and to teach science in a variety of ways. This section will

describe these themes and provide examples from the interview data for all subthemes. The themes and subthemes for Finding One can also be seen in Table 1 above.

Connection.

The tellers described many ways in which storytelling can build connections. These connections could be between people or communities, between people and the natural world, or could be a sense of almost spiritual oneness between a person and the larger universe. When asked about his intentions for telling environmental stories, P2's response captured the essence of storytellers' desire to use stories to connect:

But, then you know that more vague thing that's hard to put a finger on...is to helping them feel connected. Helping them feel connected as an audience, helping them feel connected to the wild world, helping them feel connected to each other in this dialogue that they have with their partner where they feel, you know, part of this on-going experiment we call life. (P2)

Six of seven tellers described how they use stories to help people connect with or build a relationship with the natural world. As P4 stated, "you're trying to introduce the person to a character, an animal, and get them to make that connection." P2 stated one of the powerful things about storytelling in EE is that it "really helps people connect and really feel like they're part of the environment." In P2's words, "in a very tangible, very mind on, heart connected way they feel that relationship to the wild world" through storytelling experiences. And P5 stated that stories "help build those sort of bridges and connections between people and the natural world."

And, in working with kids there are some kids who are naturally excited about birds, and bears, and bugs and they'll love them no matter what you do, but

there's a big of chunk of kids that for whatever reason just haven't made that connection with nature, I mean they are not outdoorsy kids, maybe their parents didn't take them camping like mine did; they need a connection with the outdoors before they can really care about those things. And, you know, going to a nature center, going to an environmental ed center does some of that connecting...but if you don't have those opportunities right away, stories can do that I don't know if it's quite as effective, but can do some of those same connecting pieces; it gives people some context. (P5)

Three of seven storytellers mentioned using stories to help build connections by connecting people to their communities. P1 expounded on an idea of Aldo Leopold's and said that "what we've got to do is expand our sense of community, of neighborhood, to include the trees, and the birds, and the rocks, and the water...So that expansion, I feel like that can happen in story." P3 mentioned that stories can also connect the generations together, another way of connecting communities. According to P2, "it's through stories we know our connection to the wild world, to our society, to each other."

There's the act of storytelling, how storytelling brings communities together, builds warmth and intimacy, shared connection that nourishes all of us who are part of that. So in some ways, the whole storytelling event becomes a contemplative practice, a ceremony to experience the togetherness, to be refreshed...without it having to be a specific...story about that, so it could be a, a wonderful fairytale, and it could be all sorts of different kinds of stories. (P1)

Five of seven tellers talked about using stories to help their audiences feel a sense of spiritual oneness, or connection, with the wider universe. As P6 stated, “we’re all one part of the world.” P5 said that he shares stories “that get people thinking about their place in the universe, in the world.”

I think that whole idea that we are part of a whole, that there is a continuum of which humans beings are part, we’re not above nature or beyond nature, but part of the circle and that’s an integral part of the message in most stories that we hear or tell. (P3)

Among the participants P1 was the only one who connected religion, EE, and storytelling. P1 described how he uses the ancient religious traditions and wisdom to explore questions that are part of both the religious and the EE realm, specifically questions related to what it means that “we are all one.” He uses these stories to explore how important it is to live and act sustainably if we are all truly one.

I find religious tradition, not only Judaism, that religious traditions also are filled with wisdom about humanity’s relationship with the natural world. And not only that, the relationship in community, and relationship to the mystical, theological idea of the source of life. And...those relationships, were all, it felt like to me, relevant to what I was learning as an environmental educator. ‘Cause the question that came up is, well, what is our relationship here as an individual in society with the natural world? What are the choices I make? How do I change my life? I can teach others, you know, and I do that indirectly, I can learn and teach others, but how do I really change my life and live my life differently? How do I become, kind of, more, and more congruent with my own values, with

these values in living with less impact and that's it's impossible to have no impact? (P1)

P1 also paraphrased the words of Buddhist theologian Thich Nhat Hanh and stated that Thich Nhat Hanh:

Says in a beautiful and simple way that we're also cloud and sun and flower.

That's who we are. So we inter-are. That's how he talks about oneness. That it's all one. And, then, then how does that inform our actions? What do we do about it? And to me those are really fundamental environmental questions. And, so, as a storyteller, that's in the background as I share stories. (P1)

Inspiration.

The storytellers in this study are also using storytelling to inspire people in a variety of ways. The tellers explained that their stories can inspire a sense of appreciation for the natural world and that listeners will begin to care about the natural world. The storytellers believed that stories can inspire the listeners to take action to benefit the natural world, that the listeners' attitudes towards the natural world will change in positive ways, and that the stories can inspire people to search for additional knowledge about the topics in the stories. Finally, the tellers explained how their stories inspire deeper discussions after the stories have been told.

Six of seven storytellers described how stories could inspire a sense of appreciation for the natural world. P1 said that one impact of telling stories is "an appreciation for being outside, appreciation for the nuance of wind and sound and smells and the feeling of being outside." P3 stated that stories from the Abenaki culture

“have their own message for conservation or for an appreciation and understanding of the natural world.”

Stories about where the wildflowers came from and they, the explanation in the story, of course, is recognized as being fanciful and made up, but the whole point is to pay attention. When you see the ground carpeted with bluebonnets, pay attention. It may not have been actually due to Pecos Bill lassoing a rainbow and bringing it down, but pay attention, notice, appreciate; that’s what we’re here for. (P7)

P7 has developed what he called a “rubric of aware, care, dare,” which described how stories can be used to inspire appreciation, care, and action for the natural world:

We can tell stories that build awareness and tell about the creatures, tell about the plants and all their interrelations and fill people full of those fascinating, wonderful information about what we can learn out there. But, if they don’t care about it, it’s just more data to forget as soon as you walk out. So, I try to make them care about it by talking about what’s at stake, about the value of these creatures...And then I try to inspire them to dare to do something to preserve it by telling stories of, you know, Rachel Carson and the chipkos, the tree huggers, and other people who’ve made a difference. (P7)

In addition to P7, two other tellers also mentioned that they hope the stories they tell inspire people to care about the natural world. P4 stated that “in general the stories and the environmental education itself, I think the main goal is to inspire them to care about something.” P4 also stated that the listeners may be inspired to care about the natural world through the knowledge they gain from the stories. In P4’s words, “with a

little bit more knowledge might come a little bit more caring about whatever you're teaching them about.”

Several of the storytellers acknowledge that knowledge about environmental topics is important. However, three of seven storytellers discussed the need for combining stories with the science in order to inspire people to care about the natural world. P1 had “the sense that science has brought objectivity into the world and a distance from the natural world and a deadening of the trees and birds around us and that the pre-modern world had that sensibility.” P5 also explained how stories can be a tool to get people to care:

Science is great in explaining how things work, but when I was doing environmental education no one starts caring about something because of the science, science is fairly dispassionate, it's not very emotional, and so it's great at explaining something, but it doesn't make people care, and stories have the ability to get people to care about things. (P5)

Really we need both ways of communicating, because if we only use science, people aren't really going to care about the natural world and we've seen what happens with that. But, if we only use folktales then we won't understand the science of how things function and how to address some of the environmental problems that we have. So, they really need to be sort of walking hand in hand.

(P5)

Six of seven storytellers described how stories can inspire people to take action. P4 uses a combination of historical documents, storytelling, and experiences out in the land where the nature center is located to inspire people to take action. He said that after

reading the documents and then “getting the children out on prairie hiking actually in it and seeing the beauty of it...I quite often see that “ah-ha!” about this is something really beautiful and precious and something we need to protect.” P2 uses real-world stories of actions that other people have taken to protect and preserve the environment to inspire others to act. As he stated, “I love when I tell stories about those kinds of groups that it inspires other groups to try to do those kinds of things.” P7 stated that his aware, care, dare system of storytelling has the goal of getting people to care enough that they will take action for the environment:

I want to inspire people to care enough about our world that they will pay attention and *do something* (voice rises), do something, because there’s lots of research about people whose hearts are in the right places, but they still drive SUVs and throw trash out the window and whatever. And they don’t believe that their actions have an impact and I want them to know that that they really do.

(P7)

When I’m telling stories on conservation or environmental themes I try to find stories that get people’s attention and get them thinking about doing something different as part of their life or even just thinking differently about animals or plants. (P5)

This quote from P5 also illustrates the attitude change which three of seven storytellers mentioned could result from storytelling. In P7’s words, “mainly I think storytelling is an extremely powerful tool for education and for inspiring attitude change.” P5 said “I’ll choose stories about animals that we have negative attitudes about...and help people see the value of those animals by telling stories about them.”

These stories may be about animals such as wolves, bats, snakes, and bugs. P3 explained how a group of very tough, inner-city youth came to the nature center where he works and were disrespectful to each other and scared of the unfamiliar natural world. He explained “once they got them out in the woods, gathered around the fire and started telling stories, at the end of two days they had changed their attitude, they were really listening.” According to P3, the changes in attitude also lead to changes in behavior; the youth began to both be kinder to each other and to take an interest in the natural world.

Three of seven tellers hoped that their stories inspire the search for more knowledge. P4 stated that “you’re never going to be able to give them all of the information so you really want to inspire them to want to learn more or to want to do more.” According to P1, after a storytelling experience “there’s excitement for storytelling for sure, excitement to look in and find other stories of the tradition.” P6 also thinks that stories can inspire further the quest for more knowledge. For example, when he teaches about the water cycle through song and movement stories he believes that “they’ll get more excited about learning about water.”

Finally, four of seven storytellers explained how stories inspire deeper discussion after the telling. As P1 explained, “I found they could really talk afterwards about the story in really, I thought, very sophisticated ways...they’re just really able to enter into these conversations with the context of story (pause) that I found very powerful.” P1 further explained that after he tells a story, “what I like to do then is then weave conversations exploring the images. And, what do they mean for us...it anchors it

even more and makes those connections” between the listener and the story “visible for all.”

The tellers explained that they sometimes use these discussions to weave in both the story and the science way of looking at the topic and to encourage the audience members to think or talk about the science behind the ideas in the story. Three of seven tellers mentioned this idea of discussing the story reason versus the science reason after the story has been told:

At the end of that story, I’ll often talk with kids and I’ll say, okay you know the story gave you a story reason why male birds have colors and female birds don’t have bright colors, you know, can you give me a science reason for that? And, what I’m really trying to do is connect up those sort of two ways of thinking, that you know science gives us the how things work piece of things and stories give us sort of the why it matters or why it relates to us. (P5)

There’s gonna be a six year old in the front row who says, “Well, that explains one possum. How did all the others lose the hair off their tails?”...And so I like to be ready with any story I tell, I like to make sure that I also have researched what the natural history is, what the scientists say, because then I can explain that we can enjoy both kinds of stories and the scientists have a different story about how it came to be. (P7)

Motivation.

Two of the seven storytellers are using stories to motivate others. P2 uses stories to motivate hands-on science. While he was the only teller to mention this use of storytelling, it seemed to be very important to him. P2 explained that he once had an

experience at a school telling a story about cottonwood trees and streamside stabilization and kids were trying to go outside to do the experiment he mentioned in the story even before the story was over:

Before I could even wrap up the story, take a little bow, and get their round of applause, this library of about 150 kids erupted into a conversation where they were going outside, you know, whether or not the teacher allowed them to, they were going to go outside and start sticking sticks in the ground of different species of trees and watering them and not watering them to see which ones would grow and which ones, you know, would regenerate...And, so you know, stories really do have that...not just can I model science process, but it drives, it encourages, it inspires and motivates hands-on science, because there are always a few loose ends in the story and the kids want to find out so they want to go out and do their own hands-on experiment. (P2)

P7 uses his own storytelling to motivate other storytellers to begin telling stories about and for the environment.

My colleagues often say, “well, gosh I’m concerned about the environment and I want to do something about it, but I already have a repertoire and a name as a certain kind of storyteller and I don’t want to have to learn a whole lot of new nature stories and besides I don’t have the background because I was a theatre major or a library major or whatever.” And, I want to be able to encourage them that they can do something. (P7)

Using Stories to Teach Science.

The tellers described four ways in which storytelling can be used to teach science and environmentally related topics: to transmit knowledge and facts about the natural world and science, to teach about the process of science, to teach EE concepts, and to make abstract scientific concepts concrete. As P4 stated, “I love storytelling. It is my favorite way of teaching.”

Five of seven tellers use stories to transmit knowledge. When asked about his intentions for telling environmental stories, P7 said, “I use storytelling to try to get across ideas in science, especially environmental science” and stated, “I want to transmit information, of course.” P7 further explained, “We can tell stories that build awareness and tell about the creatures, tell about the plants and all their interrelations and fill people full of those fascinating, wonderful information about what we can learn out there.” P6 also uses stories to transmit knowledge and said that “I became, you know, knowledgeable on those things” and he now uses stories to “translate” that knowledge about the natural world to the various audiences he works with. P2 also uses stories to transmit knowledge in ways that are appropriate for the specific audience. As he said, “with preschoolers it’s just fun and magical and yet they’re getting a good dose of science.” P2 further explained how the content can change depending on the age group:

I can do the rainforest with second graders and prairie restoration with fifth graders and, you know, entomology with high school students or macro-invertebrate indicator analysis you know depending on the audience and the teachers or the goal there’s some content goals. (P2)

To be able to have that knowledge that you can surround yourself with a little bit of a story or just a little bit of facts; we're all storytellers by heart...But, that's what it is, it's not, it's not afraid to spit out your facts, but in a fun, engaging way that...can be memorable [sic]. (P6)

Two of the tellers specifically mentioned that they tell a story with an idea of what knowledge or content they want to transmit to the audience. P6 stated, I "hope my stories have at least one thing that comes across in everybody's mind." P2 said, "because, you know, I am a scholar and an environmentalist hopefully everybody in the audience walks away with at least a few new facts and a few new ideas." P6 added that "I might say I have those three, four, five things in my little story or my naturalist walk, let's say, on nature, that they at least know those four scientific things and they don't even know they're learning."

Six of seven storytellers use stories to teach EE concepts. P2 loves to tell stories about "the big cycles of nature" such as the water cycle and plate tectonics. P6 tells stories about the water cycle, food chains, and concepts such as "you better watch out where you're eating, you always want to be careful what you're doing, you can't always get out of a sticky situation by laughing and dancing." P7 tells stories about concepts such as taking responsibility, that "every piece counts, another idea is unanticipated consequences and the fact that well-meaning things sometimes cause more problems if you don't look at the whole picture," and the idea that natural systems are more complicated than we think and that "you can't presume you understand a system." P3 tells traditional stories that have messages for sustainability and contain concepts such as "we have to think about the future when we deal with such things as hunting and

fishing.” P5 tells stories, some original, about many concepts, including conservation, environmentalism, predators and prey, adaptations, and habitats:

I do also a kind of program that is more environmentally themed and so the folktales that are in there, and some original stories that are in there, focus on different environmental education concepts, so sometimes the concepts I use are commoner’s four laws of ecology, everything goes somewhere, no such thing as a free lunch, those sorts of things. Or, depending what the school’s learning about, concepts like adaptations or habitat. Adaptations are real easy to do with folktales ‘cause they’re often about animals getting or losing things and there’s a folktale way to do them. (P5)

A story like [turtle tries to fly south for the winter] would be my introduction to a program on bird migration especially since it, it not only hooks them, but one of the really important points that it brings out in the story is that migration is really all about food. Most people think it’s just to get away from the cold, but it truly is all about food. Birds can handle the cold, but they would starve, they would die if they were also starving to death in the cold. So, you know, that’s just one example of how I might use a story like that to introduce a topic or a theme in a program. (P4)

Three of seven storytellers use stories to teach about the processes of science. P2 stated that “for me storytelling is the embodiment of science process skills.” P2 further explained that the new national science standards are all about “teaching kids to think like scientists” and he believes “story is the best way, one of the best ways, to do that.” In fact, P2 often designs simple experiments into his stories in such a way that the

audience naturally flows into the experience of taking part in the experiment without ever leaving the story. He explained that when people hear or read a story they are naturally:

trying to figure out what's going to happen next and looking at the clues and evidence to make predictions about outcomes, and I'm already switching towards scientific vocabulary. People are collecting data and analyzing data and making predictions and drawing conclusions and formulating a hypothesis about what's going to happen. So, good stories that are written with that science awareness engage the audience in the scientific process...I'm engaging the audience in analyzing data and drawing their own conclusions. You know, formulating good questions and thinking in questions and then design their own investigations and walking them through a very hands-on, visceral experience of science process skills. (P2)

P6 also uses stories to teach science process skills. The stories P6 uses often come from the history of the nature preserve where he works. For example, he uses the story of the exotic conifers in the closely planted arboretum, which are now being eaten by pine bark beetles, to teach about the process of transforming an area into a healthy ecosystem with native species. P6 explained that "it's an ongoing thing...talking about the trees and how you can in your own backyard, basically do this yourself, you know, take down the trees and then plant something native, and why should we plant native?" P6 also uses the unique form of drama to engage students in an experience of both the story of the land where the lessons take place and the science process skills:

My other stories consist of talking about the stories of the bluff and there we go into the bluffs [] are made up of the old seas, of course and so they will find their own fossils and dig for the fossils and we'll become geologists and they have to wear their certain eyewear and there's certain hammers to use and they get all dressed up to do that and we talk about the layers of the bluff and they get to collect things as well and take home and then we talk about how the bluff has changed. (P6)

Six of seven storytellers described stories as a hook or as something sticky that stays with people. P4 explained that "the storytelling is the hook, it's the attention getter, it's the you know how to get them interested and enthusiastic about what you're going to be teaching about...the story is the spark...gettin' those fires of curiosity burning." He went on to explain that "once you've got 'em hooked through a fun story...then you can work in the message, the lesson and they'll hear it much better than if you just started in with the lesson itself." P5 said that "they definitely stick with people. So I'm never concerned about that. Stories will definitely stick."

One of the seven storytellers shared that another reason stories are such an excellent tool for teaching science is because they make abstract topics concrete. Though none of the other storytellers mentioned this, it seemed to be a very important concept for this teller. P2 stated that "for me, if you want to get out the yellow highlighter and underscore this point, for me one of the most powerful things about storytelling in environmental education is it makes abstract concepts tangible." He went on to illustrate how he goes about making "big ideas concrete" with several examples of stories he tells about topics such as the water cycle and food webs:

Then, as an environmental educator I also quickly figured out that if I, you know, tried to explain some really complicated science idea they may or may not get it. But, if I can tell them a simple story, like one of the first stories that I created... was, you know, about the food web in which I get bit by a mosquito and the mosquito gets eaten by a dragonfly and the dragonfly gets eaten by a frog and a frog gets eaten by a fish that we caught and ate for supper. And, so now the food web is not some abstract idea in a science book, something out there, it is literally what you had for supper. And, every kid at camp got bit by mosquitos; that was just part of the camp experience (laughs). And, they loved to fish and we loved to catch frogs and so this, you know, was very visceral, very real for them. (P2)

Finding 2: The storytellers are telling stories to a variety of audiences that range from preschoolers to PhD aquatic ecologists to senior citizens

The storytellers gave many examples of the audiences with whom they share stories. This section describes these types of audiences and provides examples. Table 2 below shows the audiences that two or more storytellers mentioned.

Table 2

Types of Audiences

Type	P1	P2	P3	P4	P5	P6	P7
School Children (elementary)	x	x	x	x	x	x	x
Nature Centers		x	x	x	x	x	
Conservation Groups			x	x	x		x
Preschoolers		x		x	x	x	
All Ages	x		x	x			
Storytelling Festivals			x	x			x
Adults				x		x	
College Students			x				x
Families	x			x			
National Park Service			x				x

Seven of seven storytellers tell stories to elementary school aged children, generally in the format of school programs that take place at either schools or nature centers. However, P1 also tells stories to elementary aged youth in the form of going on Shretelech, or fairy, finding expeditions:

The excitement is overflowing to be able to do this. And then we stop and “oh, I think we saw one!” “Oh, it’s a, it’s a cricket on a leaf.” And then they all circle up and watch the cricket, you know. Or, it’s a, it’s a, it’s a dragonfly right along the pond’s edge, but it might have been a Shretelech, right? (P1)

Five of seven storytellers tell stories for nature center audiences, both at nature centers where they work and at nature centers when they are hired for special programs. In addition, four of seven storytellers also tell stories for conservation groups. For example, P7 tells stories for conservation groups such as native plant societies, the Sierra Club, the Nature Conservancy, and Audubon, while P5 mentioned telling stories for watershed organizations.

Four of seven storytellers tell stories specifically for audiences of preschool-aged children. Three of seven storytellers stated that they tell stories for audiences of all ages, however some participants commented on the age of the audiences for whom they most typically get hired to tell stories. In P7’s words, “I hardly ever get hired for middle and high school...so it’s mostly elementary.”

I do programs for all ages, and sometimes even adult programs I’ll start with storytelling, but typically you see people thinking of storytelling as a [sic] activity for children, and so you have people that bring you out for children’s programs, or family programs. And, that’s typically what you get looking for a storytelling type of program. (P4)

Two of seven storytellers mentioned telling stories to families. P1 mentioned that he offers “programming for whole families” at the local synagogue and also in the form of “storytelling performances around the campfire.” P4 offered a description of the

family campfire programs that he offers; “I do summer sunset family campfire programs at one of our campgrounds occasionally, which is your typical family campground campfire type of program where we’ll play some games and sing some songs and tell stories, of course.”

Three of seven storytellers also tell stories at storytelling festivals such as the annual National Storytelling Festival (P3) or the Rocky Mountain Storytelling Festival (P7). Other types of audiences were mentioned by two of seven participants, including National Park Service rangers, adults, and college students. One of seven participants mentioned that they tell stories to people who attend birding festivals, farmers’ markets, libraries, pow-wows, and cultural history festivals and that they tell stories to Native American elders, seniors’ groups, scout groups, and both in-service and pre-service teachers. P2 mentioned that he often tells stories to conference attendees at EE state association conferences, regional conferences for the National Science Teachers, and conferences for scientists such as PhD aquatic ecologists or PhD ornithologists. P7 stated a unique position regarding his usual audience for storytelling, which he calls “the choir:”

The people who are happy to hear about it are the choir, you know, like preaching to the choir? They’re the people who are already on your side and they just like to have affirmation and a donation if possible; in other words they can’t afford to pay you anything to do that work. (P7)

Finding 3: The storytellers are using many types of stories in their storytelling programs

The participants tell stories that fall into three broad categories, including stories to meet the goals of EE, which includes both cultural and natural history stories, original stories created by the storytellers, and other types of stories. Types of stories mentioned by the tellers are shown in Table 3 below. While the researcher has organized the types of stories into these three broad categories, many of the types of stories also overlap slightly.

Table 3

Types of Stories

Type	P1	P2	P3	P4	P5	P6	P7
Stories to meet the goals of EE	x	x	x	x	x	x	x
Cultural history stories		x	x	x	x	x	
Natural history stories			x	x	x		x
Original stories by the storytellers		x		x	x	x	
Stories for entertainment	x		x	x			
Audience as story/drama			x	x			x
Songs as story				x		x	

As mentioned in Finding 1, one way the storytellers in this study are using storytelling is as a tool to meet the goals of environmental education. As such, the types of stories they use tell about the natural and cultural history of the specific areas in which they are located, teach EE concepts, and encourage environmentally responsible

behaviors and positive action by modeling what other have done to make a difference.

This section describes the themes that emerged regarding the types of stories storytellers are using and provides examples of each subtheme.

Seven of seven storytellers in this study tell types of stories that are related to the goals of EE. Seven of seven tellers tell cultural history stories, a category which includes Native American stories, traditional folktales, first person storytelling of cultural history, and historical accounts of the land. Four of seven tellers specifically mentioned that they currently use Native American stories in their programs. P4 explained that “a lot of the cultural history is environmentally related and especially a lot of the Native American folklore and as you look into a lot of folklore from Aboriginal people many stories are environmentally related.” According to P3, who discussed Native American stories from the Abenaki culture, “every traditional story always on the one hand entertains, but on the other hand contains lessons that are worth teaching and many of those lessons have to do with our relationship to the ecosystem in which we are immersed.” P6 said that he tells Native American stories related to the nature preserve where he works: “I pull and pick through a lot of Native American stories, too, that kind of fit with some of the smaller components of our preserve.” Several of the storytellers who use Native American stories also spoke about the value of the ancient wisdom that these cultures and stories offer. P7 stated that, “I also like to share the ancient stories because I think our ancestors had a lot to say to us.”

Many of our stories in the Abenaki tradition have a direct relationship to the environment and conservation...so stories like that, which are an integral part of

Abenaki traditional culture, are certainly stories that have their own message for conservation or for an appreciation and understanding of the natural world. (P3)

In contrast to the tellers mentioned above, two storytellers began their careers telling Native American stories, but no longer use these stories in their performances. P1 currently tells stories related to the Jewish tradition and to the intersection of Jewish teachings, history, and environmental education. However, he began his storytelling career telling Native American stories. As he explained, “I was a young environmental educator and sharing lots of short two and three minute stories often Native American stories about animals and seasons.” P5 also no longer uses Native American stories in his storytelling performances. While he, like P1, began his storytelling career telling stories from books such as *Keepers of the Earth*, P5 now feels that there is too much controversy and debate surrounding the issue of who can tell stories from cultures to which they don’t belong:

I decided that that kind of debate can cause problems. If every time I do an environmental education story program in the back of my mind or in conversation with people after the program, if the debate is, you know, who can tell which story and what’s allowed to be told that’s a distraction from what I want to do. And, so...15 years ago maybe, I just began taking out the Native American stories that I told and use European American stories, or the way storytellers have done for a long time, re-craft stories from other cultures to be set in North America, because really a lot of the value of Native American stories for me as a storyteller in natural resources was it involved the animals and plants that are here. (P5)

Four of seven tellers tell traditional folktales from around the world, which may include Native American stories and stories from other cultures, but which the storytellers refer to as “folktales” or “folklore” rather than as “Native American stories.” P2 stated that he “is rooted in traditional folklore.” P5 stated that the program he gives the most “is more environmentally themed and so the folktales that are in there, and some original stories that are in there, focus on different environmental education concepts.”

I like to tell the fanciful folktales even when they probably were composed by our elders for purposes of teaching human behavior and civility and so forth rather than to explain how come possum’s tail is bare, or something like that.

(P7)

Two of seven storytellers use first-person storytelling to tell stories about the history of science or about the cultural history where they are located. In this type of storytelling, the storyteller dresses up as a historical character and stays in character throughout the entire performance. P2 plays various characters including John James Audubon and Charles Darwin “with an emphasis on historical naturalists.” P2 uses first person storytelling “because it is challenging to the audience, inviting them to travel back in time and see the wild world as it once was.” He also uses first-person storytelling to teach science and science process skills. For example, when P2 is telling stories as Audubon, he explained that “rather than me just lecturing them about Audubon did this experiment, because I am Audubon I engage them in helping me with this experiment and letting them, you know, form a hypothesis, collect and analyze data.”

P4 also uses first person storytelling; however, he uses it more for cultural history interpretation. He has developed several characters including a pioneer farmer in the year 1840 and a “Metis, French-Indian fur trader.” When he is in character, P4 tells stories that are applicable to that character’s setting and time and that are related to the history of the region. For example, as the pioneer farmer, P4 tells about the pioneer farmer’s journeys and about settling in the area. P4 explained how in his fur trading character, “I just started doing some storytelling in my programs telling about some French and Fur Trade folklore as well as Native American folklore and again just because it was such an important part of that culture.”

P6 mentioned several types of cultural history storytelling that none of the other participants mentioned. P6 mentioned using types of stories that teach about the history of scientific discoveries, the history of “rules and regulations in the environment,” and stories about “our heritage of state symbols and what it means to be in Illinois.” He also described programs in which he uses drama as the storytelling tool to teach cultural history, another type of cultural history story that no other participant mentioned using and that might push many people’s definition of what storytelling is:

We have this thing called the Piasa bird here...it’s an old Native American symbol that was on the bluffs, painted on the bluffs...which basically commemorated the fight from the chief versus the Piasa bird so we go on and talk about the Piasa bird and I make all the kids do it even though they don’t know their lines, I just give them certain words and stuff, and we all become a Illini chief and the warriors and somebody becomes the Piasa bird and that just works great with geology because we have the Piasa bird, the old painting was

on the bluffs right where we do the geology, and so that also gets them excited.

So they learn about the Piasa bird and more history. (P6)

Six of seven storytellers in this study tell natural history stories, a category which includes types of stories related to natural and seasonal phenomena and include what P2 calls “trailside stories.” For example, P4 has worked for the last 15 years at a conservation organization where he does mostly “natural history focused programs” on “all kinds of natural themes and topics that usually include some storytelling, and a hike, and educational activities.” One example of a theme for P4’s natural history programs is a full moon hike where “we go out and hike under a full moon and do storytelling and sometimes the stories are you know moon and night time related.” P4 also explained how he uses stories to address seasonal natural phenomena. For example, he said, “if I’m talking about birds and bird migration, one of my favorite stories to tell is an old Native American story on how turtle flew south for the winter.” P6 also tells natural history stories, often within the context of the hikes he leads at the nature preserve where he works. These hikes might include wild edibles or be a “wildflower hike, a tree hike, a karst hike, a geology hike, things like that, and then the stories are brought in there.” P3 tells stories about many natural history topics, such as animal tracks, at the nature center where he works.

Two of seven storytellers spoke about the use of trailside stories as one type of story they tell. P2 explained what trailside telling is and how it differs from regular storytelling performances where

you’ve got an hour, ahhh, you can breathe, you can really take your time, and set-up this setting and introduce the characters and introduce the threat of the

problem and build towards that exciting climax and then resolve it. You have to do all of that in two sentences when you're doing trailside storytelling. And, so, I've been working really hard lately at collecting, you know, having at least a dozen stories in my back pocket that I know will work on any trail. But also, being really open to that moment on that trail and...then how can I on the spot interpret what's going on to help the audience connect in trailside telling. (P2)

P6 also spoke about trailside storytelling in terms of being ready for the teachable moment while out on the trail:

So, it just depends, you know, when I'm walking on the trail and I know I'm supposed to be teaching about hawks or something, or owls, but then all of a sudden then a big, huge bull frog comes out of somewhere (laughs), then you're on a whole 'nother track. So, whether I had something planned (laughs) rather than you know having it, you know, choreographed for you (laughs) you just don't, things just kind of happen. (P6)

In addition to natural and cultural history stories, five of seven storytellers also tell types of stories that aim to either teach behaviors, in this case positive behaviors related to the environment, such as conservation, or to get people thinking about changing their behaviors, for example to be more sustainable. P7 stated that "there are character teaching stories about people, they don't have to be about fuzzy animals or rainforests or something." These stories that teach behaviors may be Native American stories. For example, P3 explained that "many of our stories in the Abenaki tradition have a direct relationship to the environment and conservation." P1 explained that he shares ancient writings, traditions, and holidays from the Jewish tradition that have a

direct environmental message for his audiences. He said that these traditions have “teachings about living simply and not wasting that are profound and ignored. They are so profound.” P1 also uses traditional stories to teach children how to change their behavior in simple ways, for example how to be quiet and observant in the woods as they hunt for fairies during a program. Stories to teach behaviors may also be original or reworked stories.

In a lot of the stories that I tell I’m talking about animals that talk and have a lot of emotions like human beings do and so there’s, you know, the conservation and animal biology part of the story, but there are also human behavior lessons in there. (P5)

P6 uses stories to teach about the rules and regulations of the nature preserve where he works. He also tells stories about a character he has created that he calls “Fancy Nancy the Poison Ivy Expert,” who picks poison ivy in with her bouquet of flowers and gets poison ivy everywhere, to teach groups of visiting school children about rules and regulations such as not picking the flowers on the preserve and watching out for “leaves of three.”

If you come out here you’ve gotta abide by some rules...obviously whoever taught before, obviously got that story out and [the visitors] are continuing to learn more and more about it and actually become a member of our program and help to support that ecosystem out there. (P6)

Stories that teach behaviors may also be stories that show positive examples of what people are actually doing to make a difference for the environment. Three of seven tellers use these types of stories. For example, P2 uses real-world stories of what people

have done to inspire others to act. In his work with a watershed organization, P5 uses real-world case studies to share what has worked in other watersheds:

More and more I'm finding that folktales aren't the ideal stories, but I've been using more and more case studies, examples of how different organizations have dealt with these water issues...and then talking around the ideas of sort of case studies, what people have done. Well, we've had this problem, here's the solution that's worked, and they were all solutions that were voluntary just like the controls we have now but, unless people can imagine it, it's hard for them to do it and so giving them examples, sort of real-life stories, helps with that piece. (P5)

I'm part of an organization that organizes a clean water celebration, and we give out awards for those kinds of things, but my job as the emcee is to tell stories of past winners and hopefully the room of 3,000 kids will go home and do something and then two years later they'll win the award, you know. (P2)

Storytellers in this study also tell original stories, or stories that the storytellers have written or created themselves. Three of seven storytellers use original stories, such as folktales, in their programs. P2 uses many original stories to teach science and science process skills in his programs. P7 mentioned that one of his popular programs is about dinosaurs, birds, and reptiles and while he could find folktales about birds and reptiles to tell during the program, he had to make up folktale-like stories about the dinosaurs. P5 also tells original stories in many of his programs. He stated that "if there aren't folktales or folktale like stories, you know, about your area, you need to create them or find a story from somewhere else and rework it into your setting."

Two of seven storytellers also mentioned using personal stories in their programs. Personal stories are stories the teller has created based on his own experiences. For example, P4 stated that “I’ve had a lot of experience out in the natural world and sometimes I even, you know, work personal stories about my experiences in the natural world into my programs and things like that.”

I also do a lot of my own, what I call adventures in nature...you know my own encounters with the wild world. And even though the frame of the story is a personal narrative the story is not so much about me as you get to come along on a hike and see the wild I saw, so my goal is to get out of the way and allow the audience to have this encounter with a mountain lion or dragonfly or whatever, you know, inspired the story. (P2)

Two types of stories were mentioned by only one storyteller each. While several tellers mentioned that stories should be entertaining, only one teller mentioned telling stories purely for entertainment. P1 said that he sometimes will be hired for a “Hanukkah party and share some funny stories for the community.” Similarly, only P6 mentioned using songs as a type of story in his programs.

One type of story that the tellers in this study try *not* to use is a fact tale. Two tellers mentioned these fact tales. As P6 explained, “I’m getting more exposed to *storytelling* and not just fact-basing, spitting out the facts, but using that...whole energizing, using the body language, the different sounds, all that a little bit better.”

I do notice that some stories that are really more didactic or have a lot more, where I’m really just telling a fact tale, it’s hard to get a fact tale to move with the same impetus that a folktale has. And, I can tell the difference between the

audience reactions to even my best shot at an interesting lecture and their reaction to one of the time-tested folktales. (P7)

Findings—Research Question 2

This section presents findings for the second research question regarding storytellers' perceptions of what makes stories effective for EE purposes. The findings for this section are broken into several themes, each with subthemes; examples of relevant quotations from the interviews are provided for each subtheme. There are two main findings for the second research question:

1. The storytellers shared numerous characteristics they perceive make a story effective for EE purposes.
2. There are process elements that the storyteller must go through before a story can be effectively shared with an audience.

Finding 1: The storytellers shared numerous characteristics they perceive make a story effective for EE purposes

The seven storytellers in this study described many characteristics of effective EE stories. Ultimately, these characteristics fit into two themes; effective stories must create a connection between the listener and the story and must balance heart and science. These themes, as well as subthemes, are presented below and can also be found in Table 4.

Table 4

Research Question 2: Finding 1 Themes and Subthemes

Theme	Subthemes
1) Connection to the Story	I) Audience participation—Everyone feels included II) Let the listener make their own meaning III) Tellers bring the story vividly to life IV) Tellers and audience enter the “story circle” (P3) V) Stories are relevant to the listener
2) Balance Heart and Science	I) Balance heart and science II) Balance of stories about perils/crises and stories about positive changes

Connection to the Story.

One theme that emerged from the interviews is that effective stories connect with the listener in many ways. One way storytellers effectively connect the audience with a story is by intentionally making sure that everyone in the audience feels included. In P2’s words, “that’s part of the power of storytelling. Everyone feels part of it.” Seven of seven storytellers mentioned intentionally including listeners in the story through some sort of audience participation such as singing, joining in a rhythm or repeat after me phrase, giving the audience members a chance to tell part of the story, or asking the audience questions during the story. For example, P6 tries “to include them you know, with a repeat after me song, or a repeat after me word, or something like that.” P1 might include the audience in a storytelling experience where they are learning about traditional Jewish blessings for the natural world such as blessings for trees, flowers, or rainbows. As part of this program, “then I’ll ask people...“How would you bless the tree?”...before I share what the traditional answer was. And open that up for folks, you know, kind of have that little moment of interaction.”

Often you sit people in a circle, you want to make sure that everybody is awake and listening and one of the traditional ways of doing that is for the storyteller to say “Ho” and then everyone to respond “Hey,” which shows they are part of the story and they’re listening to it. So, there is an interchange. Sometimes there are songs that are part of a story and you teach that song to the members of the audience and they sing that song with you at appropriate times. (P3)

Some stories I will tell I’ll actually work in audience participation into the story. One very fun one that I do is I will sometimes tell *The Lorax* and...I will have the audience actually do a sound for each of the characters in the story, for the humming fish, and swomme swans, and brown barbalots (laughs). (P4)

Two of seven tellers mentioned the importance of eye contact as a way to include everyone in the audience in the story. P6 said, “I’m pretty aware of that eye contact...definitely I look everybody in the eye.”

I try in my storytelling to make eye contact not just with the audience, but with *every individual* in that audience in the process of telling the story...and I think making those connections and at times speaking directly to each individual; it really brings them into the story. (P4)

Six of seven storytellers mentioned that stories connect with listeners because they let the listener make their own meaning from the story. P1 explained that “certainly teaching can get in the way and morality of like finger wagging, you know, “you should.”” Instead, he said that the meanings of the stories he tells are usually “not overt in that way.” Instead of having an overt meaning, as P2 elaborated, “the audience brings their life experience to the show and depending on what they already know and what

they're willing to open to then they interpret the stories in their own way." In P7's words, "you tell a story to 20 people and 20 different stories are heard." P3 explained that the elements of the story naturally teach lessons through the story rather than through preaching, so that it is more a sense of "let me tell you a story, instead of the 10 Commandments."

Some stories, like Aesop's fables that years ago used to have at the end of each story "the moral of the story is" and when I was a young, naïve storyteller I think I might have tried to share one of those once and realized it never works to tell people what a story's about, that stories mean different things to different people and you can't really tell them what it's about, but they'll figure it out; it always means something to somebody. (P5)

Listeners also connect with the story when the teller brings it vividly to life. Five of seven tellers mentioned the importance of bringing a story alive for the audience through the telling. P5 explained "it's really the teller's job to bring those stories to life." P1 stated that it is important to "build an authentic world for the listener. And the and the better I can do that, the more real it will live inside their heart. And that feels to me as the core of the core." P2 explained how when he is able to bring the world of the story alive "the walls literally disappear and people go on these journeys and they encounter a mountain lion and you can see them cringe and sometimes they even shriek when the mountain lion, you know, pounces." Among participants in this study, P6 uses the idea of bringing the story alive in a unique way because he uses drama as a story. P6 explained that during one program the students were learning about biomes and "they'd safari on over to the prairies and safari on over to the forests and we'd talk about that.

So in a sense they were becoming the story themselves; they were actually becoming that *explorer*.”

The story comes alive in part due to the authenticity with which the teller tells the story. Two of seven storytellers specifically mentioned the importance of telling a story authentically. “I think what makes a story most effective is the authenticity of the telling” (P1). P2 explained that he has even traveled to places where his stories take place so that he can learn about the details of the story’s setting. He explained that then “there’s an authenticity to my telling; I would like to think that the audience can smell it and feel it.”

Of course rich content is good and ways of...exploring a story afterwards is good, but this authenticity of the telling. That it’s something that’s coming, that’s just sincere and authentic. And there’re lots of different styles of storytelling. It’s not like there’s a certain way of performing that is the one way that’s effective. For me it’s, I really believe it’s the authenticity. (P1)

The stories also come alive because, as four of seven tellers explained, effectively told stories are co-creational. This means that the teller is creating the world of the story through his words, gestures, and movements and through the images that he is describing for the listener in vivid detail. At the same time, the listener is interpreting the story for herself, seeing the images of the story in her head, perhaps even physically responding to the story; the story is coming alive in her mind. As P5 said, “storytelling, unlike a lot of art forms, is co-creative.” P1 explained that “only half of it is what I’m sharing the other half is all the image making that’s happening in their bodies, in their minds.”

So, there is a constant back and forth between you and those people who are listening. So, it's actually not like watching a television program or sitting in front of a movie screen, but an experience of giving and taking and of flowing back and forth. (P3)

During an effectively told story, six of seven tellers described how the listeners and the teller enter some version of what P3 calls "the story circle" where the world of the story comes alive. The storytellers explained that this deep connection to the story begins to happen almost as soon as the story begins. According to P7, "as soon as you say "Once, long ago," or "A long, long time ago"...people look up, and they, they know it's going to be a story." P1 calls this "story circle" sensation "an energy wave." P2 explains that "when we are listening and telling a story together that, well, an African storyteller once told me "there's no such thing as an audience, there's no such thing as a performer, we're all together sharing this story.'"

I always like to say that a story takes you to a timeless place and when you're in that story that is the place you are and then you're released back into the original world you started from which may appear sometimes rather different after having been in the environment of the story. (P3)

Five of seven tellers mentioned that stories should be relevant to the listeners in order to connect with them and to be effective. P4 stated that "in order for any story or environmental program to be effective... the audience needs to be able to relate to it in one way or another." In order to accomplish this, P4 said that he may include "characters or situations that the audience can relate to themselves." P2 mentioned a similar approach to making stories relevant to the listener. His stories may incorporate

activities that the listener can relate to, such as fishing and catching frogs in his story about the food web. According to P2, this makes a story “very visceral, very real” for the listener. In P5’s words, “stories give us sort of the why...why it matters or why it relates to us.” In addition, because the story is memorable and sticks in the listeners’ minds and hearts, the listeners can recall the story at a later point in their lives when it is relevant:

First you know they hear a story, it moves them. The story lived...from heart to heart it’s transmitted and it resides now in all of our hearts, all the listeners’ hearts and they have it and they can talk about the story and they connect it up with what’s happening in their own life. (P1)

The storyteller can also increase the sense of relevance by including the local context of the listener, including a local flora, fauna, and setting. Two tellers spoke about the importance of a local context for EE stories. For example, P2 has a story that he loves to tell and he adapts it for each performance by adding “the local flora and fauna wherever I’m telling the story.” He uses the same technique with trailside stories during programs. He described how he has learned many short, three to four sentence stories that will work almost anywhere and that include “a big idea, so that I can plug in the local particulars.” P5 explained that “it doesn’t work so well if you’re in an area that has black bears and little brown bats to be telling stories about elephants; it just doesn’t work.”

I think the best kind of storytelling involves the animals and plants, the resources of where you are; those are the best things for an environmental story. You don’t want to tell stories about Africa or Asia when you’re in the US, you

want to tell stories about your own area...so that way people don't have to imagine things; they can see them, they can see the trees, they can see the river, they can see the lake, you know, that makes it easier for people. (P5)

An effective story may also connect with a listener's heart simply because it is entertaining. Three tellers mentioned that stories should be entertaining. According to P3, "every traditional story always on the one hand entertains, but on the other hand contains lessons that are worth teaching." In P2's words, "but what makes it entertaining?...some of it is, you know, borderline cliché: is it funny? Is it, got some unusual twists and turns? Is there some nice wit with your vocabulary and puns?"

First and foremost, it has to be entertaining. If they're not having fun then what's the point? I don't want to bore them; I don't want them to loath science or loath the environment—it's boring. So, it has to be entertaining, first and foremost. (P2)

Balance Heart and Science.

According to five of seven storytellers, effective EE stories balance heart and science. One way that the tellers add heart into their stories is by including elements of magic and fantasy alongside the science. In P6's words, "you can...talk about anything and make it a story and if you know your facts and you can put that little bit of facts with a little bit of fantasy... it really resonates with people." When talking about wolf education and fighting the negative attitudes that are, perhaps, dominant regarding wolves, P5 said, "science isn't a bad thing, but by connecting up science and folktales and stories it would make it even more effective."

There's a good dose of heart, that it balances kind of left and right brain, that there's imagination and hard science, that there's some good facts, but also some empathy...stories mix that up in a really tasty stew. So there's meat, there's something to chew on, for the vegetarians there's lots of protein, beans and tofu, but there's also some lively spice and unusual, exotic flavors and things. (P2)

I think there's something about a fanciful story that gives us privileged access to people's ears...I try...to give the innocent kids as much information from the viewpoint of a scientist to go with the fanciful story and enjoy both of them just as much. (P7)

Another way of looking at the idea of balancing heart and science in stories is that, according to four of seven tellers, effective EE storytelling programs must have a balance of stories that tell about the perils the environment is facing and stories that tell about positive actions that people are taking or have taken to help the environment.

I think that we almost shoot ourselves in the foot if we tell story after story about “*ohhhh* (dramatically), this issue is going extinct” and “*ohhhh* (dramatically) the icebergs are melting and the poor polar bears have nothing to sit on”, and “the glaciers are melting, and the rivers are gonna dry up, and etc., etc., etc.” People just walk out shaking themselves and eager to not hear that kind of stuff again, you know (laughs in a shaking your head kind of way). I think it's important to at least include or conclude with some stories that tell about positive changes. (P7)

I think a problem the environmental movement had was trying to use sort of negative emotions, shame and blame, to get people to change their behavior and

we don't tend to do that; we don't tend to change our behavior because of shame and blame, at least not quickly, sometimes we do it secretly years later when no one is looking, but I think...the emotions that tend to get us to change behavior are sort of positive ones, feeling good, feeling happy, feeling excited and so I need people excited about an animal, you know, that's really my goal, that animals do these amazing things and, you know, it's a privilege to see an animal and once you see the animal, oh you can share this cool story about the animal that you saw. So I think that's what I'm aiming for with my stories. (P5)

Finding 2: There are process elements that the storyteller must go through before a story can be effectively shared with an audience

There are certain process elements that the storyteller must go through or accomplish before even sharing stories, including finding inspiration, negotiating barriers, and developing the skills needed to effectively tell stories. These themes, as well as relevant subthemes, are described below and can also be found in Table 5.

Table 5

Research Question 2: Finding 2 Themes and Subthemes

Theme	Subthemes
1) Inspiration	I) Inspiration from nature/go outside II) Inspiration from the teller's science background
2) Negotiation of Barriers	I) Changing perceptions of the value of EE storytelling II) Changing school climate III) Misunderstandings about the definition and purpose(s) of storytelling IV) Disagreement about appropriate audiences for storytelling V) Regional politics and political climate
3) Skills for Storytelling	I) The development of performance skills II) Teller should be prepared for the context of audience III) Teller needs knowledge about the natural world IV) Teller must respond to the audience

The Process of Storytelling—Inspiration.

Storytellers need to find inspiration for the stories that they tell. Five of seven tellers mentioned that they get inspiration for stories from nature itself and from simply going outside. In P2's words, "I always say it's into the wild world that I get my juice." P4 explained, "I think that in my deep connection with nature, and being able to tell people about some of my own experiences, does help me a lot in interpreting nature." P5 also felt "having experiences in the outdoors makes it easier to tell stories about animals and plants and it also makes it easier to create new stories." P6 mentioned the importance of being open to inspiration from what happens in nature as he is teaching outside; "things happen in the forest at all times, so your whole story could change, and to be ready for that." P2 also follows this "go outside" mentality when he is teaching others to do EE storytelling:

When I'm doing environmental storytelling, teaching them to tell stories, we go outside and have an adventure because, you know, to be a great poet, don't study poetry, live a rich life and you have lots of poems to write you know. Go out and have an adventure and you've got stories to tell. (P2)

Two tellers mentioned that inspiration may also come from the teller's background in science. In P6's words, "the stories...have to come from somewhere. So they have to have basis of some science, some background in those animals or plants or habitats that you're going to be working with." P5 explained that when he tells and creates stories, "my science background helps with...just sort of an understanding of how animals" behave and move. P6 explained how he has always been a scientist first

and foremost, but wanted an effective way to share his knowledge of the natural world and found it in storytelling:

Well it's basically becoming a naturalist, learning about the environment, the environment does it for you. I'm just a scientist at heart and by education, but I wanted to know more about the world and then be able to share it and so just being able to use my observation skills and using a lot of scientific methods I was able to discover more about the world and then I can use that in different education settings. (P6)

The Process of Storytelling—Negotiation of Barriers.

In order for the performance and sharing of stories to occur effectively, the storytellers must navigate a variety of barriers. Five of seven storytellers mentioned various barriers that they must negotiate. The storytellers mentioned that they have to navigate changing perceptions about the values of EE storytelling, changing climates in schools, misconceptions and confusion about the very definition of what storytelling is, and a perception of storytelling as appropriate only for children.

Two tellers discussed that EE no longer seems to be a priority in schools. According to P7, “a few years ago, not a few anymore, more like 10 years ago, it seemed like environmental education was a hot topic, at least in elementary schools, and you could get bookings,” but he feels that there is now less of a demand for storytelling performances. P5, who lives in a completely different region of the United States than P7, echoed these sentiments:

The sort of ecology end of things were really popular about 10 years ago; I did a lot of school ecology programs...So whether it's just sort of a cycle, or, you

know, there was a time, probably in the mid- to late-90s where conservation and environmental ed were sort of at the front of people's mind...and you know a lot of things were going on then and things have shifted a little bit. (P5)

Three of seven tellers suggested additional barriers related to changes in schools. For example, according to P7 part of this change in school climates came when the "No Child Left Behind" focus kind of forced the schools to look at nothing but test taking." According to P5, this shift in school climate has also led to a change in the types of programs schools are requesting, which are currently more likely to be bully prevention or state history programs than programs related to EE storytelling.

Two storytellers mentioned school funding is an additional barrier. P7 and his storytelling partner had to give up offering the EE storytelling program they were providing for both students and teachers both because "schools just didn't have the time" and because "financing and scheduling for in-service training for teachers was really being throttled." P6 mentioned that they often have 80 kids show up at one time at the nature center where he works because "busing is very expensive, so they mash them all onto one bus and bring them all at one time." They navigate this barrier by providing activities, some of which may include storytelling, in rotations with volunteer staff. P6 mentioned that yet another barrier is that teachers feel they need to meet standards when they have an experience at the nature center. However, P6 negotiates this barrier by asking what standards teachers want to meet well before they arrive because "when I'm more prepared that way, instead of just doing my canned programs, I can be more creative and I can add more stories."

The storytellers may even have to navigate misunderstandings about what storytelling is. Five of seven tellers mentioned the definition of storytelling, suggesting just how diverse the definition can be even among professionals in the field. The tellers may also have to contend with the misunderstanding about storytelling from those outside the field, including from those who are hiring or managing them. For example, P1 stated “I want you to know that people who I work with don’t understand it, in the way that I’m sharing it... you know maybe they’ll see storytelling as for kids with open books and for entertainment.” P4 stated that, “sometimes where I work in my natural history programs, my current managers sometimes question my storytelling and some of the stories I tell and “Where is the message?” “Where is the lesson in that story?”” P5 explained “most schools use some folktale or fairy tale programs in the school...but what they do is they read them out of a book, which is better than nothing, but it’s not really what storytelling is.” He went on to explain:

unfortunately one challenge that happens is, since there are no guidelines for being a storyteller, if someone goes to a school and does a really mediocre job of telling stories, since most people never see storytellers, they say “Oh that’s what storytelling is.” They think that’s what the art form is, it’s not very good quality; we’re not going to get a storyteller again. And, I’ve heard this from storytellers that they call schools, and they say “Well, we had one of those once and they were terrible, so we’re not hiring any more storytellers.” When they never say that to jugglers or magicians or musicians because, you know, everyone’s seen David Copperfield, or they’ve seen a musician and they know there are good musicians and not-so-good musicians. (P5)

The tellers may also have to negotiate what storytelling means among their colleagues in the field of storytelling. For example, P6 thinks of songs as stories, while P5 has a very specific definition for storytelling that does not include songs. P6 would also consider “the land as its own story,” while some tellers would not consider this to fit within the definition of story:

Defining storytelling has been tricky in the storytelling world. When storytellers get together at a conference, even deciding what we do and how we do it has been a controversial thing and being a scientist I don't like things that aren't precise. A lot of sort of the artistic folks are really comfortable with being, “well, you know, storytelling is, you know, sharing stories.” And... it's not quite good enough because so many people use the word storytelling. They use it in referring to movies, they use it referring to music, they use it referring to dance, and those aren't nearly specific enough for the kind of artwork that I do. (P5)

Storytelling is, is not only talking with movements and facial expressions, but I think, you know, singing is, there's a lot of Native American folklore stories that have a lot of songs in it. I kind of drift to those stories, and art, too...some arts and crafts. (P6)

Two storytellers mentioned that they also have to navigate a barrier regarding the types of audiences for whom they are hired to give storytelling performances. According to P4, “typically you see people thinking of storytelling as an activity for children.” P7 deals with a similar issue and stated “[I] hardly ever get hired for middle and high school but it's, so it's mostly elementary.”

P7 mentioned a unique barrier that none of the other storytellers mentioned. P7 explained how he must negotiate the political climate of the location where he tells stories. In P7's words, "at least in this part of the country, the idea that if you mention climate change you must be a communist, subversive terrorist...there's less of a market for" EE storytelling. P7 explained some of the regional controversy surrounding the term "evolution:"

We have to be very careful about using the "E" word, but somehow we can talk about things changing over the generations and people who "live by the word" (said with an exaggerated southern drawl) don't get caught on to what you're saying if you don't say the trigger word. So, I get away with it. (P7)

The Process of Storytelling—Skills for Storytelling.

In order to effectively share stories, storytellers must develop the actual skills needed to share stories including developing performance skills, deciding which stories to tell to a certain audience, and responding to the audience's reactions.

Storytellers have to have a certain level of performance skills in order to effectively share stories. While some people define a storyteller as anyone sharing the activities of their day with another person, P5 makes more of a distinction between the performance skills of amateur storytellers and those who do "artistic storytelling as a performance tool" using the metaphor of professionals in other artistic fields:

The difference I think of between those two categories is, you know, everybody *can* sing a song, everybody *can* dance, but there are professional dancers and there are professional singers and the skill level between...the amateur and the professional is pretty big. (P5)

The performance skills of a professional storyteller may include the use of gestures, movements, and eye contact, which was mentioned by two tellers. Not only do tellers have to learn to make eye contact with the audience members, but P6 also stated, “you have to speak with your eyes, you have to speak with your whole body.” Another aspect of developing these performance skills is time spent practicing. In P6’s words, “practice, practice, practice (laughs)...you have to sit in front of the mirror and sometimes you just have to tell the story over and over to get it, to get the point across and...it flows more fluidly.”

Another performance skill that three of seven tellers mentioned is listening. In P3’s words, “I have to be a very good listener because to be a storyteller you have to be a listener first.” P6 also stated, “you have to learn to listen as well and be a very attentive listener.” P1 explained how he also feels it is important to prepare the audience to be good listeners:

It’s important to set it up as well to the best of our ability...allowing for listening and what I do is...give people chance for stretches and I tell them it’s different than reading a book, you know...in storytelling it’s all coming out, you can’t go back, you know. And once it’s out, it’s out, so it really requires our attention. (P1)

Another process aspect of storytelling is that the teller must be prepared for the audience’s context in order for the stories to be effective. As previously mentioned, this may include being aware of the political climate of the region and knowing how people in the audience may feel about a non-Native American teller telling Native American stories. In addition, effective EE stories are often set in the region where the storytelling

performance is occurring. Thus, as three of seven tellers mentioned, the teller may have to create new stories or rework existing stories for the local context by including local flora and fauna and a local setting. In P5's words, "if there aren't folktales or folktale like stories, you know, about your area, you need to create them or find a story from somewhere else and rework it into your setting." P1 stated, "for me as a storyteller I'm also mixing and matching and I'm recreating stories." P6 explained how he modified one traditional tale about a groundhog and wolves to include coyotes because they don't have wolves in the area where he tells stories. In order to successfully rework stories, the teller needs skills in both crafting original stories and in modifying existing stories.

In order to be prepared for the audience's context, the teller must also choose what to tell based on what is known about the audience. For example, five of seven tellers described how they change their stories depending on the age and capabilities of the audience. In P5's words, a story is "never word for word the same sort of thing depending on my audience, you know, I'll tell a story differently to third graders than I will to adults." P2 explained how when he is telling a story about the water cycle, he's "following a drop of water through the water cycle and it can be as complicated as the audience is capable."

For the younger children often the themes are focused around a particular animal or trees or insect or something like that and as we get into older groups we'll sometimes do more habitat related type of programs, you know, prairie or forest programs. (P4)

Two tellers described how EE storytellers need to have knowledge about the natural world so they are able to share what is happening in nature with the audience

during teachable moments or with trailside stories. In P6's words, "nature is happening *now* and...you gotta stop and look at it and you gotta be able to share it (laughs) *at that moment.*"

If my job as an interpreter, in every emphasis of that word, to interpret the wild world, so I need to know languages of trees and rocks and insects so that it is spontaneous. What does this tree in this habitat telling me right now? And, how can I interpret that for my listener? And, so it's a little bit like the United Nations, you know, I have to learn several languages, insects, and reptiles, and birds, but also the bigger language of the forest and then how can I on the spot interpret what's going on to help the audience connect in trailside telling? (P2)

Finally, in order for a story or storytelling performance to be effective, the teller must be able to respond to the audience. Seven of seven storytellers discussed how the teller needs to be able to read and respond to the audience's reactions to the story in order for the experience to be effective. P5 explained that "what you're doing for that piece is you're watching your audience members and seeing what they react to, what they like, what they don't like, and you're adjusting your story." P3 explained that he rarely has "a list of stories ahead of time or even have a mental list of what I'm going to do; I really let the circumstances dictate the choice to me. And, a story comes when it's needed."

It's sometimes it's just a matter of changing the pace of the story, changing the tone of the story, telling a different story, that works better with your audience. I'll sometimes go to an event with stories in mind that I'm planning on telling and once I see the audience and get a feel of the atmosphere and see what's

going on with the program, I'll sometimes just completely shift gears and tell completely different stories, then what I was planning on doing. And, it helps to have a big repertoire (laughs) of stories, where you are able to do that and just shift gears with the audience. (P4)

You really feel the audience and you respond to how they behave, to the looks on their faces, the tone of their voices, their body posture, all these things are read by the storyteller and I think that we as storytellers, if we're doing a good job, respond to that. (P3)

And watching their facial expression and their body language and the way that they are engaged and I guess if you wanted you know a meter to know how it works, that's the meter you look for. You look into the eyes of the audience and you know. (P2)

Summary

This chapter presented the findings that emerged from the interviews conducted with seven professional environmental storytellers. Findings were presented by research question and organized into themes and subthemes. Evidence, in the form of quotations in the participants' own words, was presented for each subtheme. Three primary findings were presented for the first research question. The first finding stated that the storytellers in this study are using stories to connect, inspire, and motivate as well as to teach science. The second finding explained the types of audiences for whom these storytellers tell stories and give programs. Finally, the third finding explored the types of stories that these tellers are using in their programs.

Two findings were presented for the second research question. The first finding presented what the storytellers in this study perceive to be characteristics of effective stories. These characteristics fit under two broad themes: that effective stories build connections between the listener and the story and, second, that effective EE stories balance heart and science. Finally, the second finding described process elements that the storytellers must go through before they are able to share stories effectively. These processes included finding inspiration for their stories, negotiating barriers regarding EE storytelling, and developing the skills needed to effectively share stories.

CHAPTER 5

Discussion

Overview

The purpose of this exploratory, qualitative study was to investigate professional environmental storytellers' use of oral storytelling as a tool for EE. The seven professional storytellers who participated in this study were also asked to share their perceptions of what makes a story effective for EE purposes. Interviews with the seven storyteller participants provided the qualitative data for this study. The interviews were transcribed and then the data was coded, inductively analyzed, and distilled into themes and subthemes (see Chapter Three for additional information about the data collection and analysis process). The findings were presented in Chapter Four by research question. Direct quotations from the interviews were provided as evidence.

The following research questions guided the study:

1. How are professional storytellers currently using storytelling as a tool for EE?
2. What are professional storytellers' perceptions about what makes storytelling effective for teaching EE?

This chapter provides the researcher's interpretations of the findings and connects the findings to the literature. The chapter also presents implications for practitioners, limitations of the study, recommendations for future research, and conclusions.

Discussion of Results

The results of this study have the potential to be meaningful and useful to storytellers, EE practitioners, and others interested in using oral storytelling as a tool for EE and for teaching across the curriculum. Interviews with seven professional storytellers provided the data for this study and the storytellers spoke eloquently, at times profoundly, about the art and power of storytelling and the many ways that they believe storytelling can be used for EE. The themes that form the findings of this study emerged from the perceptions, stories, and experiences that the storytellers shared. These storytellers truly believe that storytelling is a powerful tool for EE and they have staked their careers and livelihoods on this belief. Some of the findings that emerged from this study align with research on the use of storytelling in the fields of education and EE. Other findings appear to be new and will add to the body of literature on the phenomenon of oral storytelling as a tool for EE from the storytellers' perspectives.

Finding one for the first research question describes how the storytellers are using stories for EE. Storytellers are using stories to connect and inspire people, to motivate learners and other storytellers, and to teach science. Within the theme of connections, one of the most powerful themes that emerged is how storytellers are using stories to help people develop a sense of connection with the natural world. In P5's words, stories help people build "bridges and connections between people and the natural world." The use of storytelling as a tool to help people develop connections with the natural world is supported in the literature by numerous researchers who have written about this aspect of environmental storytelling (Bizard & Schuster, 2007; Payne, 2010; Tooth & Renshaw, 2009; Nanson, 2005; Wattchow & Brown, 2011). Due to the

growing disconnect between people and the natural world this seems to be an important, even profound finding. This means that storytellers are trying to connect people to the natural world through the meaningful experience of hearing a story; they want people to feel something about and to care about the natural world. Some people come into EE classes or experiences without ever having had experiences in the outdoors. Storytelling is one way to offer an experience in the tradition of experiential education that can begin to build these bridges and connections. In my own training as an environmental educator, I received only one two-hour long workshop in the use of storytelling as a tool for EE. This suggests to me that there is an apparent lack of recognition in the EE field of the ability of story to provide this basic level of connection from which care, desire for knowledge, and inspiration for action can arise.

The storytellers believe that stories have the power not only to connect people with the natural world, but also to inspire action on behalf of the natural world. The tellers believe that once people have an affective connection with the natural world and care about it that stories and storytelling can inspire people to action. In P7's words, "I want to inspire people to care enough about our world that they will pay attention and *do something*." The idea that a sense of connection to the natural world can lead to action for the environment is echoed in the literature (Hinds & Sparks, 2008; Nanson, 2005; Kals, Schumacher, & Montada, 1999; Pepi, 1994; Pooley & O'Connor, 2000; Wattachow & Brown, 2011). This means that storytelling contributes to the sometimes elusive goal EE goal of motivating people to take action for the environment. According to the tellers in this study, real-world stories and case studies of what people are actually

doing to help the environment are especially powerful types of stories for inspiring others to act.

The storytellers in this study also spoke about using stories to teach science and environmental science. The storytellers spoke about the power of stories to act as “sticky hooks” to get students and listeners motivated to learn. Research by authors such as Schank & Berman (2006) and Wiggins & McTighe (2005) supports the claim that stories can motivate learning. Once listeners are motivated, engaged, and enthused, the storytellers explained how they can then use stories to transmit knowledge to the listeners. The storytellers felt that because the content was connected to a story that the listeners were more likely to remember the content and be engaged with it. As P6 explained, “if I want to teach the little guys about photosynthesis about leaves and trees then of course a story would be easier for them to remember, and recognize, and associate with.” The literature supports the claim that stories are memorable and make content memorable (Hadzigeorgiou et al., 2011; NCTE, 1992; Haven, 2007; Janner, 1994; Wiggins & McTighe, 2005) in part because students remember content that is infused with emotion (Sousa, 2006; Nansen, 2005; Mallan, 1997; Haven, 2007; Schank & Berman, 2006) and in part because stories also help make the content relevant and meaningful to the listener (Ollerenshaw, 2006; Haven, 2007; Shank, 1990; Strauss, 2006a, 2006b; Wiggins & McTighe, 2005), thus making it more memorable. This finding demonstrates that stories speak to listeners’ emotions; it impacts them to the core. Storytelling can be both a way to teach content and a way to make the content stick with students. Schools and EE programs seem to always be looking for teaching methods that teach content in a way that it stays with the student even after the test; it

seems that storytelling could help to accomplish such a goal. In addition, storytelling engages both listener and teller and continues to engage them long after the story ends in making meaning from the story, thus continuing the conversation and the educational experience. For example, several weeks after telling a story about a snowshoe hare to a group of preschoolers, I can still reference the story when we are out in the forest. The students remember the story and can connect what I am teaching them with the story we shared as listeners and teller.

The results presented in the first finding must also be discussed in relation to the goals of EE. According to the Tbilisi Declaration (UNESCO-UNEP, 1977), the goals of EE are awareness, knowledge, attitudes, skills, and participation/action. These goals align remarkably well with how the storytellers in this study are using stories for EE and what they perceive the impacts of storytelling to be. This does not imply that stories are a panacea that can be used to accomplish all the goals of EE in their totality. Rather, the tellers in this study truly believe, and have staked their careers and livelihoods on the belief, that stories and storytelling can help meet at least some aspects of the goals of EE and can inspire people to accomplish even more aspects of those goals. Indeed, these storytellers believe that stories can connect people to the natural world and inspire awareness and appreciation for the natural world. They believe that stories can transmit knowledge and that the knowledge that listeners gain through the use of stories will be memorable. The storytellers believe that stories can inspire positive attitude change in listeners. The tellers also believe that stories can help teach problem-solving skills and can motivate people to do hands-on science and to think like scientists, thus teaching them science skills as well. Finally, the tellers spoke about the power of stories to

inspire action on behalf of the natural world. It appears that stories are effective tools for EE, in nearly all aspects related to the goals of EE. However, I speculate that stories are underutilized in EE. Educators should be instructed in the use of storytelling as part of their EE “toolbox;” this idea will be discussed further in the implications section.

Findings two and three presented the results regarding the types of audiences the storytellers in this study tell stories to and the types of stories that they use in their performances. Though these findings are perhaps self-explanatory, it is worth reiterating the results. The storytellers in this study tell environmentally related stories to a wide variety of audiences. These audiences range from elementary school children to conservation groups to National Park Service rangers to attendees at storytelling festivals. Stories appear to be effective at reaching EE goals with people of all ages.

The storytellers use many types of stories in their programs, including cultural and natural history stories and original stories. One of the most striking aspects of this finding was how storytellers are using stories to inspire positive environmental behaviors and actions. Before I began this study, I expected to hear about how storytellers were using Native American stories and traditional folktales from around the world for environmentally related programs. Thus, I found it especially interesting to hear about the case-studies that P5 uses in his work with watershed organizations, the stories P6 shared of how he ties stories to conservation and restoration efforts on the nature preserve where he works, and the traditional Native American stories that P3 tells in part because of the behavior lessons they teach.

Research question two focused on the storytellers’ perceptions about what makes a story effective for EE purposes. Finding one presented the storytellers’

perceptions about characteristics of effective stories and had two themes: that effective stories 1) connect with the listener and 2) balance heart and science. All of the storytellers spoke about the importance of making everyone in the audience feel included in the story as a means of connecting them with the story. Indeed, the tellers felt that one reason storytelling is powerful is that it is inclusive; “everyone feels part of it” (P2). The inclusive power of story and the power of stories to create a sense of community are supported in the literature (Sobol, Gentile, & Sunwolf, 2004; Dyson & Genishi, 1994; Greene & Del Negro, 2010; Haven, 2007; Mallan, 1997; Coskie, Trudel, & Vohs, 2010). During a storytelling experience the teller and audience are intimately connected with the story and with each other as they experience the world of the story and enter what P3 calls the “story circle.” One way to create this strong connection between the listener and the story, as the tellers mentioned, is to bring the world of the story alive. The storytellers strive “to make the walls disappear” (P2) in order to bring the listeners with them on a journey to a new world or to a deeper appreciation and understanding of their own natural world. To help further build this sense of deep connection and inclusion, the tellers use a variety of techniques such as eye contact or involving the listeners in repeat-after me words or phrases, call and response phrases, songs, or even experiments that occur within the story that engage the audience in the story. The tellers also spoke about how stories let the listener make their own meaning from the story, which helps to further engage the audience and to strengthen the connection between the listener and the story as the listener puzzles out the story’s personal meaning.

One area of the literature that strongly supports the use of storytelling as a tool for EE is multi-cultural and minority engagement in EE (Sobol et al., 2004; Dyson & Genishi, 1994; Greene & Del Negro, 2010; Haven, 2007; Coskie et al., 2010; Mallan, 1997; Cheney, 2002; Sharkawy, 2008; Simpson, 2002; NAAEE, 2009). As mentioned above, the tellers believe that storytelling makes everyone in the audience feel included. However, the storytellers in this study did not speak directly about using stories to engage audiences typically under-engaged or under-represented in EE. I speculate that, because of its inclusive nature, storytelling is a strategy that can help make EE welcoming and accessible to multicultural and/or minority audiences and people of diverse learning styles. EE has been criticized in the past for excluding minority audiences, and I speculate that storytelling could be a way to make those groups feel that their cultural heritage and ways of learning are valued and to help them feel more welcome in EE experiences.

According to these storytellers, effective EE stories should also balance heart and science. The storytellers explained that stories that balance these two elements really “resonate with people” (P6) and can potentially have some of the impacts previously described, such as inspiring action or creating a connection between the listener and the natural world. In addition, the tellers explained that effective stories and storytelling programs balance stories of environmental crises and catastrophes with positive stories of how people are making a difference. The importance of achieving this balance of heart and science, of emotion and logic, is also supported in the literature. Many researchers in the field of EE describe the importance of including both affective connections/emotions and knowledge/ logic in EE programs (Iozzi, 1989b;

Hungerford & Volk, 1990; Ballantyne & Packer, 1996; Wattchow & Brown, 2011) in order for the programs to be effective for achieving the goals of EE. This means that storytelling could be a strategy to help bring more “heart” into EE programs, something that is sorely missing in many science-based programs despite the recognition of how important it is to bring emotions and affective aspects into education. The inclusion of more “heart” into programs can, again, help make the content more relevant, meaningful, and memorable to the listeners/students. This means that programs could connect more deeply with listeners and could impact them even after they leave the specific program by “hooking” them on the topic. Additionally, the hope is that such a balance could inspire people to take positive action for the environment.

The second finding for research question two presented the processes that storytellers must go through before they are able to share stories effectively with an audience. This finding included an element of preparation because the storytellers need to find inspiration for both developing and telling their stories. A majority of the storytellers explained how they get inspiration for their stories from time spent in nature and from just going outside. This is critical because the storytellers can share their experiences outdoors and the inspiration they get from being outside through their stories. Environmental educators of all types, as well as storytellers, could use stories to inspire other people to simply go outside and experience the world. These educators could also use stories to convey their love of and excitement about the world of nature in a way that will draw their audience/participants into that excitement. In P6’s words, “I try to get them excited like how much I’m excited...it’s just my enthusiasm and hopefully it just...comes over, you know, it spills over into these participants.”

Another process element the storytellers spoke about involved barriers to EE storytelling. These barriers may be related to the venues at which the tellers will share stories or to the audiences with whom they will share stories. It seemed that the storytellers must navigate these barriers prior to effectively sharing stories. One barrier mentioned by the storytellers involved misconceptions and disagreement about the very definition of storytelling. The idea that there is disagreement over the definition of storytelling is supported in the literature (Haven, 2007; Stein, 1982) and can actually give hope to environmental educators and teachers who want to use storytelling in their teaching and EE programs because it removes the pressure to tell stories in a certain way. There is no one right way of telling stories even among professionals, as this finding shows us, and so we should all feel welcome to tell stories in our own way.

Finally, this finding included process elements related to developing the skills needed to tell stories at a professional level. The ability to tell stories is a skill that any of us can learn and become adept at. I speculate that practitioners, both amateur and professional, could apply the advice of these professional tellers to their stories in order for their stories to become more effective for EE purposes. Professional tellers do have certain skills for telling stories that set them apart from amateurs, such as their professional use eye contact and gestures and their ability to create original stories. However, again, these are skills the amateur teller can develop over time.

In addition, a storyteller must be prepared for the specific audience. The storytellers spoke about a variety of ways that they prepare for an audience, and these findings also have implications for both amateur and professional tellers. The storytellers mentioned that they change their stories and performance depending on the

capabilities of the audience, for example they “would tell a story differently to third graders” than to adults (P5). The storytellers may also rework their stories to set the stories in the local natural and cultural, and even political, context of the region. Finally, the teller needs to be able to respond to the audience. All of the tellers spoke about the importance of observing the audience and responding on the spot to the audience’s reactions. In P3’s words, “you really feel the audience and you respond to how they behave, to the looks on their faces, the tone of their voices, their body posture, all these things are read by the storyteller.” After reading these reactions, the tellers respond by “adjusting” (P5) the story and performance. Once all of these process elements have been carried out, the teller can share a story with an audience and, with the words “Once upon a time,” transport them to the world of the story where all sorts of connections, inspiration, motivation, and learning can occur. Again, this means that amateur tellers such as teachers and EE educators could make their stories more effective by applying some of these suggestions for adapting stories to the audience’s context to their own stories. For example, in my own storytelling I now plan to incorporate elements of the audience’s season, climate, flora, fauna, and landscape into each story I tell. These storytellers suggest that the addition of these local elements will make my story more effective for EE purposes.

Limitations

This study has some obvious limitations, which the researcher desires to bring to the readers’ attention in order to facilitate decision-making about how the findings of this study could be used in other settings (Bloomberg & Volpe, 2008). First, only seven of all the potential environmental storytellers in the United States were interviewed.

These participants were selected based on the researcher's knowledge of their work or on suggestions of other participants. Surely there are many, many other environmental storytellers around the United States, and also globally, who have valuable experiences, observations, and perceptions that would contribute to the study of this topic. Secondly, the seven storytellers interviewed are all from the central, south-central, and eastern regions of the United States; there were no participants in this study from the southwestern, southeastern, or northwestern regions. Third, the researcher was hoping to interview as diverse a group of storytellers as possible, but with a relatively small group of participants opportunities for great diversity were limited. Undoubtedly, a more diverse group of storytellers could have been located. However, it is worth mentioning again that part of the rigor in qualitative studies comes from the ability of the participants to speak deeply and knowledgably about the subject and not from the representativeness of the sample (Hycner, 1985; Bloomberg & Volpe, 2008).

Additionally, the findings of this study do not exhaustively explore 1) how environmental storytellers are using stories for EE, nor 2) the perceptions of storytellers regarding how stories can effectively be used for EE purposes. The findings of this study were not intended to exhaustively explore these topics and are surely limited. Instead, this study is an exploration of these questions from the perspectives of these seven participants. It is a starting point from which further studies could be launched. More exhaustive approaches at exploring and/or answering these questions could be considered in future studies.

An additional potential perceived limitation is related to the nature of qualitative research. While generalizability is often expected in quantitative research, it is not

appropriate to expect that the findings from this qualitative study will be generalizable beyond the contexts within which these specific storytellers tell stories and give storytelling performances. However, instead of viewing the lack of generalizability as a limitation of the study, one can take into account that qualitative research often has the strength of transferability (Bloomberg & Volpe, 2008). The transferability of this study was enhanced by the use of rich description and multiple perspectives on the findings that will hopefully allow the reader to determine if selected findings could be applicable to his/her own setting.

Finally, in qualitative research the researcher is the instrument. According to Bloomberg and Volpe (2008), “the human as instrument in qualitative inquiry is both its greatest strength and its greatest weakness” (p. 152). As such it is important to note the limitations that the researcher brought to this study. The researcher’s interpretation of the findings is only one possible perspective. Multiple and rival explanations have been explored and surely exist; however, in the end the interpretation that is presented belongs to this researcher.

Implications for Practitioners

This study has a number of implications for practitioners, both for EE educators who want to use or who already use stories in their work and for storytellers who focus on environmentally related stories and programs. This study could also have implications for teachers of other subjects as the findings of this study could be transferred to teaching across the disciplines.

1. Try using stories! The first and foremost implication for practitioners of EE as well as educators in other subjects is that we should all try to use stories in our

teaching. P1 reminded us that “there is no one right way to tell a story” so we should feel free to develop our own storytelling style and voice and to experiment with the use of stories as a tool for teaching in subjects across the disciplines.

2. Make the story relevant to the listener by setting the story in the place where the audience is located. The storytellers in this study spoke about the importance of including the “local particulars,” such as the “flora and fauna” (P2), for environmental stories. This implication is something that I plan to use in my own storytelling during EE lessons and experiences. For example, I tell a story about how the first woodpecker came to be. The version I learned is a Romanian folktale set near the sea and sometimes, on a whim, I have changed the setting from near the sea to near Lake Superior. Because of how these storytellers described the importance of a local setting for making a story effective for EE purposes, I will intentionally rework the story to fit the local context of Northern Minnesota, where I usually tell stories, by both setting the story near Lake Superior and by enriching the description of the scene with descriptions of local flora and fauna.
3. When designing storytelling programs or when using stories as an element of an EE class or program, be sure to balance heart and science. The storytellers in this study spoke about the importance of balancing doom and gloom stories of environmental crises with positive stories about how people are really making a difference when designing an EE storytelling program. They also spoke about the importance of including both emotions, fantasy, and affective aspects and

scientific information within the same story. P2 and P7 spoke about the inspirational powers of positive stories to dare people to make a difference and P5 spoke about the power these stories have to lead to changes in attitudes and behaviors. It seems that practitioners would be wise to follow these recommendations if they wish their stories to have positive impacts on the audience.

4. Continue the discussion past “The End.” These storytellers spoke about the importance of discussing a story with the audience. P1, for example, believes that the conversations that occur after the story, within the context of the story, can be very powerful. I speculate that during discussion after the story the listener can begin to process the new knowledge, integrate it with what he/she already knows and has experienced, and begin the process of transferring what was learned in the story to his/her own life. Thus, it seems critical that storytellers involve the audience in some form of discussion after the story in order to provide this opportunity to process and transfer knowledge and experiences gained during the story.
5. Include instruction in basic storytelling in environmental educator training. Because stories appear to be such powerful and multifaceted tools for EE, it seems that training programs should train future educators in the use of stories as a teaching tool and in the basic skills of storytelling. For example, in my EE training program, storytelling was modeled for me as a teaching tool and then I was required to tell a story in at least one class and given multiple opportunities to tell this story. This simple progression of experiences provided me with the

confidence and desire to begin using stories throughout my EE classes and programs.

6. Use stories to add emotion, meaning, and relevance to the teaching of more traditional academic subjects. According to the storytellers in this study, practitioners can use stories as a hook to get learners “interested and enthusiastic about what you’re going to teach them about” (P4). Because “stories have the ability to get people to care about things” (P5), practitioners can also use stories to appeal to the learners’ emotions and to motivate them to learn.

Recommendations for Future Research

Because of the exploratory nature of this study there are many possible recommendations for future research that stem from this study and the associated results.

1. This study is only the beginning to all of the potential studies that could provide deeper understanding of the ways that environmental storytellers are using stories for EE. As such, additional studies could be conducted to further explore the phenomena of using stories for EE purposes. In order to gain a broader sense of this phenomenon, these studies could be conducted with a diverse population across the entire country or in countries outside the United States. These studies could potentially be quantitative in nature. Or, in order to gain an even richer, deeper understanding, future studies could be conducted with a single individual or with a small community of storytellers, such as those from a particular village or region.

2. Because the small sample size limited the diversity within this group of participants, further research could be conducted with an even more diverse group of storytellers, including for example African, African-American, Asian, and Asian-American tellers and tellers from the southern and northwestern parts of the US. Further research could also include more women tellers, as only two of the seven participants in this study were women.
3. The results of this research suggest that these storytellers perceive that storytelling creates connections between people and the natural world and transmits knowledge about the natural world, among other results. However, these are the perceptions of the storytellers. Do the stories have the impacts that the tellers perceive? Future studies could include pre- and post-tests of audiences at EE storytelling performances in an attempt to measure some of the impacts of EE storytelling.
4. The storytellers in this study perceived that storytelling can inspire people to take action in environmentally positive ways. Future research could explore this further. Does an EE storytelling experience have a measurable impact on audience members' intentions to act? What about on their actual actions and/or behaviors following the storytelling experience?

Conclusions

When I set out to conduct this study, I wanted to find out how environmental storytellers were using stories for EE; I was curious to find out if they were using stories in ways that were supported by the literature or in completely different ways. The

findings are encouraging because I found that they are indeed using stories in ways that mirror the existing research on the power of stories in educational settings as well as the available literature on the use of stories in EE settings specifically. However, I found that the ways that these tellers are using stories are so much richer and more meaningful than I could have expected or that the limited research suggested. They are using stories to meet aspects of the goals of EE in creative, meaningful, and inclusive ways.

Furthermore, the storytellers are thinking deeply about how to make their environmental stories as effective as possible. Practitioners, including myself, can learn from their suggestions for making environmental stories effective in order to make our own stories and teaching more effective. And, we can learn from the tremendous breadth of audiences, types of stories, and ways they are using stories that stories can be effectively used in many EE settings. These tellers can inspire us to move outside of our comfort zones and use stories more often, use different types of stories with more types of audiences, and to tell stories to meet different purposes in our lessons and programs.

In Chapter 2 I discussed the growing divide between many people and the natural world. I also discussed the need for a sense of connection to the natural world as a prerequisite to environmentally positive attitudes, values, and actions. Storytellers in this study echoed these sentiments and spoke passionately about the need for change. Storytellers spoke about the need to connect people to the natural world so that they have affective connections that lead them on a search for knowledge and set them on the path to attitude change and to taking action. In P5's words, "they need a connection with the outdoors before they can really care about those things." The storytellers also

mentioned the need to change our behaviors and actions to be more sustainable and pro-environmental:

Shifting to a sustainable culture...there are small shallow changes and there are larger, deeper changes and there are particular actions we need to take and there are actually shifts in our culture in our ideas that we hold about our relationship with the natural world. (P1)

Storytelling seems to offer one tool for helping EE to reshape peoples' ideas about their relationship with the natural world and their actions towards it. In the words of Wattchow and Brown (2011), "in place-responsive outdoor education telling stories, or facilitating others' stories, that connect nature and culture become part of the responsibility of being with people in outdoor spaces" (p. 189). Now that my study is completed, I believe in this even more strongly than I did when I first decided to study this topic. It is my hope that this study can provide a chance, a space, for the reader of this study, for myself, and for environmental educators to rethink our role as storytellers and to reimagine how stories fit into the larger picture of environmental education. Oral storytelling truly appears to be a powerful tool for EE.

The End.

Or, perhaps, just the beginning.

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Appendix A

Interview Guide

- Orally consented to interview.
- Orally consented to video-recording of interview.
- Orally consented to audio-recording of interview.

Date _____ Location _____

1. How did you become a storyteller?
2. What does it mean to you to be a storyteller?
3. How did you begin to tell environmentally related stories?
4. How do your experiences in the natural world impact you when you tell stories?
 - a. Additional question as necessary:
 - What is your background in EE?
5. Tell me about the audiences who come to your environmentally related storytelling performances or hire you to do these performances.
 - a. Additional question as necessary:
 - Tell me about the audiences who hire you to do private environmental storytelling performances/workshops/etc.
6. Tell me about the venues for your storytelling programs.
7. What types of environmental storytelling programs do you offer? (in school, community groups, public, etc.)
8. Tell me about the qualities and characteristics of your environmentally related stories.
 - a. Additional questions as necessary:
 - Tell me about the themes of your stories.
 - Tell me about the characters of your stories.
 - Tell me about the structures/arcs of your stories. (Alternate phrasing: How are your stories put together?)
9. Describe what is happening between you and the audience when you tell stories.
10. What does it feel like when you tell a story that is working?

11. What does it feel like when you tell a story that is *not* working?
12. Tell me about your intentions when telling an environmental story.
13. Tell me about how your audience reacts when you tell a story. What do you observe?
14. What are examples of ways that your environmental stories change/have changed people and/or behavior?
 - a. Additional questions as necessary:
 - What are some concrete examples of your stories changing behavior?
 - Tell me about the impacts of your environmental stories—for example, perhaps audience members have passed on stories to you about how your stories have impacted them, their students, and so forth.
15. What are your perceptions about what makes a story an effective *environmental* story?
16. What does it mean to have a story or storytelling experience be effective for EE?
 - a. Additional questions as necessary:
 - What are your experiences of what works when you are telling stories for EE?
 - Please describe a story or storytelling experience that would be effective for EE.
17. Is there anything else you would like to share with me regarding storytelling or environmental stories?
18. Additional questions as necessary.
19. Do you have any environmental storytellers that you recommend that I interview?
20. Demographic questions:
 - a. Do you consider yourself to be a professional storyteller? (circle one)
Yes No

- b. How many years have you been telling stories as a professional storyteller? _____
- c. Sex (circle one): Male Female