Regenerative Education Development and Design: Exploring a Regenerative Socio-ecological Systems Framework

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Dedication

To my family:
Thank you for your unwavering support in my efforts to understand and pursue my life's purpose so that I may give back to the Earth, community, and future generations.

Acknowledgements

I want to offer my thanks to the many people and experiences that led to my decision to pursue a Ph.D. in Sustainability Education. I also want to thank the people and places that supported me through the completion of this incredible journey. My parents, who provided critical opportunities for me to appreciate and connect with Nature. It is from these early childhood experiences that I was able to foster a relationship with this part of myself. My parents also instilled in me a strong work ethic, and a passion for learning and teaching. To my sociology professors who opened my eyes to the underlying structures that have led to social, economic and ecological suffering. To Tim Magill and Larry Chambers for giving me the opportunity to bring my passions to life through outdoor education employment. To the various private, public, and charter school students, teachers, and administrators who allowed me to develop a deeper understanding of the needs and opportunities within the field of education.

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Finally, I want to thank my life partner and wife, Charissa Biederman. Thank you for giving me the gift of the time and energy that has gone into this part of my life journey as I strive to fully become myself. It is because of your unwavering love and strength that I found the capacity to complete this Ph.D. and evolve as a person, father, and husband.

Abstract

The worldview of separation has been identified as a significant contributor to current complex and converging social, ecological, and economic issues. In response, the field of sustainability education emerged as a means of cultivating changes in worldviews toward holistic and interconnected ways of knowing and being. This research study aimed to develop strategies for educational program designs that move beyond sustainability through place-informed regenerative education. The framework that surfaced from this study is referred to as the Regenerative Socio-ecological Systems Framework. This approach revealed the needs and opportunities within various scales of Durango, Colorado's socio-ecological system that could inform a regenerative education program design. Data for the study were collected from program designers, bioregional observations, key informant focus groups, and young adult interviews. Eight multiscale themes emerged from the data which aligned with eight regenerative development and design principles. Findings from the research study are presented as a set of recommendations for a regenerative education program specific to Durango, Colorado for young adults. Suggestions for future research include adapting the Regenerative Socio-ecological Systems Framework to a wide range of socio-ecological studies, various types of data collection, and the implementation of different regenerative projects. Further research recommendations also include extending the Regenerative Socio-ecological Systems Framework using regenerative systems indicators, as well as incorporating aspects of network mapping and network weaving into regenerative development and design socio-ecological research.

Keywords: Regenerative development and design, regenerative education, socio-ecological systems framework, place-based education, rites of passage, sustainability education

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Chapter 1: Background and Rationale

The crisis we face is first and foremost one of mind, perception, and values: hence, it is a challenge to those institutions presuming to shape minds, perceptions, and values. It is an educational challenge. More of the same kind of education can only make things worse. This is not an argument against education but rather an argument for the kind of education that prepares people for lives and livelihoods suited to a planet with a biosphere that operates by laws of ecology and thermodynamics. (Orr, 2004, p. 27)

I was born into a family of educators, as my father was a high school history teacher, and my mother was a third-grade teacher in the small town of McMinnville, Oregon. With their summers free to explore other interests, they spent these months as administrators at a summer camp in the Southwest region of the United States. As luck would have it, I arrived in the world in July while my parents were working at the camp. Thus began my experience of a deep connection with a large, primarily undeveloped landscape in northern Arizona.

For most of my childhood the Oregon school year culminated with a fully packed Oldsmobile and an ensuing pilgrimage to Arizona. This pattern formed themes in my life that are alive today. I cherished these summer experiences where my family donned cowboy hats and boots, rode horses in the desert, watched sunsets, and went on outdoor adventures throughout the four corners region. These experiences and places were such a contrast to the rainy green Oregon setting of my hometown. My family took on different personas as we conformed to the landscape and activities in this magical faraway place of the high desert.

Eventually, I became a counselor at the camp while participating in outdoor pursuits programming as an undergraduate student at the University of Oregon. After graduation, I worked in the outdoor adventure field for organizations like the University of California, San

Diego, Outward Bound, and the YMCA. Then, desiring to continue a career in adventure programming, I completed a master's degree in Recreation Administration. I then returned to my childhood summer camp to become the Assistant Director. During this time, I spent part of the school year living and working at the camp, which was also an independent school. I was amazed at the educational opportunities these students enjoyed and intrigued as they participated in organic gardening, horseback riding, outdoor programming, field studies, athletics, and daily chores.

To broaden my education background, I decided to pursue a master's degree in Education through Northern Arizona University with the intention of working at an independent school. After several twists and turns in life, including marriage and working at two schools, I moved to southern New Hampshire to work for Boston University's Sargent Center for Outdoor Education. This position gave me a platform to begin to develop the types of Nature connection and transformative experiences I was eager to facilitate. To provide the program with more depth and a set of values through which programs and activities were delivered, I worked to create a concept called the K.E.Y. to adventure. The K.E.Y. was a physical key the summer campers and staff would earn at the end of the program, as well as an acronym that stood for Kinship, Environment, and You, the integration of self, others, and Nature. The K.E.Y. became the basis for every aspect of the camp and was deeply ingrained in my thinking and facilitation of the program (Appendix Y).

As part of the process of expanding my understanding of weaving together personal development, communities, and Nature, I encountered several concepts, including the idea of the "inner genius" proposed by Meade (2012), as well as the path to a more sustainable future through the cultivation of fully mature adults in an ecocentric society as suggested by Plotkin

(2006). In addition, literature in the fields of permaculture, ecopsychology, coyote mentoring, and ecological literacy also found their way onto my bookshelf. I was inspired by these writings and my work with youth and young adults as a facilitator of Nature connection experiences outdoor education and residential summer camp. As a result, I began contemplating the creation of a curriculum development framework rooted in ecological design. This framework would allow the educational designer to implement guiding principles based on the context of the students and the learning environment.

With these life influences propelling me forward**,** I identified the Prescott College Ph.D. program as a means of deepening my understanding of sustainability education and providing the mentoring and support necessary to bring these educational ideas to life. I desired to create an ecology-based educational framework which encouraged personal growth and development toward discovering and fostering one's inner gifts on the path to becoming a mature, initiated adult. I hoped to engage in a research study that explored experiential education, ecological consciousness, place-based education, systems theory, regenerative design, and ecocentric human development models. My vision was to apply these concepts in designing and implementing young adult transformative education programs. I intended to contribute to the body of knowledge surrounding this work and engage in a research study that deepened my understanding of post-secondary sustainability education programs that encourage the manifestation of regenerative cultures.

I have come to believe that the root of ecological and social crises stems from a perception that humans are separate from Nature. I want to identify a platform for helping people develop an interconnected worldview where they see themselves *as* Nature. I had previously conceptualized the scales of personal development and community transitions toward

sustainability as different systems that are related to each other. However, now I have come to understand how these systems are linked more fully, are in a reciprocal relationship with each other, and are, in fact, not separate.

This research project aims to explore the possibilities of place-informed educational design and implementation for young adults in the search for healing the narrative of separation from self, others, and Nature. The research design offered here draws on theoretical frameworks and approaches that acknowledge that the researcher is not separate from the research. This search for meaning and understanding is deeply personal. I am a product of the culture of separation and have suffered the consequences of a lack of skillfully facilitated connections with self, community, and Nature. My personal development has not included intentional relationships with elders, purposeful rites of passage experiences, guided connection with Nature, and the discovery of inner gifts. As I transitioned into adulthood, I attempted to self-initiate through high-risk behaviors, adventure activities, wandering/travel, Nature exploration, reading, and varied human relationships. While these attempts accelerated my development, they lacked elements that may be necessary to support the transition into fully initiated adulthood. This left me searching for a culturally viable means of identifying and fully embracing and living my inner gifts.

Education can play a powerful role in the process of cultivating personal and cultural sustainability. However, there are opportunities to look beyond existing educational frameworks so that education can intentionally deviate from the role of colonizer and replicator of the dominant Western culture. This research project is not meant to be a linear cause and effect reductionist attempt at producing objective scientific findings. Rather, it has been designed to innovate a research approach and an educational framework to ground educational design in

place and facilitate relationships between the self, community, and Nature. This approach is meant to offer one of many possible ways to repair and regenerate a multitude of currently splintered socio-ecological systems.

My desire to participate in the healing of socio-ecological systems comes with the acknowledgment of my heritage as a white male descendant of colonizers who perpetrated the intentional separation of Indigenous peoples from the land, a process that also attempted to systematically dismantle Indigenous cultures across multiple countries. This research project is an attempt to take the first steps to repair these injustices while participating in a humble and open process of inquiry. This research project takes place in and around the town of Durango, Colorado, and I acknowledge that this is the traditional territorial land of the Ancestral Puebloans and the Southern Ute People, past and present, and honor with gratitude the land itself and the people who have (and continue to) steward it throughout the generations.

Culture of Separation

One of the driving forces behind this research project is an inquiry into opportunities for healing the split between the dominant Western culture and Nature. Social and economic structures are putting tremendous pressure on the ecological systems that support life on Earth (Rockström et al., 2009). Social justice issues rooted in colonization and dominance suppress the voices of the marginalized (Shiva, 2014) and consumption recklessly converts Nature into products and services faster than ecosystems can replenish themselves (Wackernagel et al., 2002). A growing body of work highlights the effects humans are having on the ability for life to sustain itself on Earth (Meyer & Newman, 2018; Rockström et al., 2009; Steffen et al., 2011). These destructive social and economic behaviors cause pain and suffering for both people and

Nature (Roszak, 2001). The driving force behind the deteriorating fabric of sustainable socio-ecological systems is the worldview of separation.

The destructive behaviors of the dominant Western culture can be traced back to the decoupling of human consciousness from Nature. The belief that humans are in charge of Nature and that ecosystems only hold instrumental value emerged from objective science and reductionist thinking. While the origin of consciousness has been challenging for researchers to pinpoint, there is a consensus that consciousness allows humans to experience reality through the formation of mental models (Morris, 2002; O'Sullivan & Taylor, 2004). These models can be conceived of as structures used to take in information and organize experiences. These organizing structures are typically referred to as worldviews, which play an essential role in the formation of human values, beliefs, attitudes, and behaviors (Kambo et al., 2016; Opstal & Hugé, 2013; Schein, 2017; Schlitz et al., 2010; Sterling, 2009). The mechanistic worldview that is prevalent in the dominant culture has been referred to as a worldview of separation (Uhl, 2013; Wahl, 2016).

According to O'Sullivan and Taylor (2004), "The recognition of the role of consciousness in shaping our experience, our perceptions, our expectations, and ultimately, our actions is one of the most powerful themes to emerge in Western societies during the twentieth century" (p. 5). Worldviews act as a lens that helps us filter new experiences and interpret new social situations (Schlitz et al., 2010). While individuals may hold different worldviews, each society holds a collective worldview that provides a cultural framework. According to Bear (2000),

> culture comprises a society's philosophy about the nature of reality, the values that flow from this philosophy, and the social customs that embody these values. Any individual within a culture is going to have his or her own personal interpretation of the collective

> cultural code; however, the individual's worldview has its roots in the culture - that is, in the society's shared philosophy, values, and customs. (p. 77)

The collective worldview shared by the dominant Western culture is threatening the planet's stability. This worldview prioritizes individualism, consumerism, and economic growth and attempts to control and codify Nature.

At the root of ecologically destructive human behaviors is a worldview where humans are disconnected from Nature (Du Plessis & Brandon, 2015; Miroshkin et al., 2019; Pisters et al., 2019; Sewall, 1998; Sterling, 2009; Tavstukha et al., 2017; Uhl, 2013; White, 2011; Raus, 2016). According to Miroshkin et al. (2019), "the environmental crisis is currently regarded as a worldview crisis, as a crisis of human consciousness and its relationship to nature" (p. 593). The reductionist worldview formed during the Renaissance and Enlightenment periods as the human relationship to Nature was reoriented and advanced by the development of objective science and the work of Newton, Galileo, Descartes, and Darwin (Du Plessis & Brandon, 2015; Mang & Haggard, 2016; Mang & Reed, 2012b). The worldview of separation is reinforced by religious paradigms that place humans as stewards and caretakers of the more-than-human world (Sessions, 1995; White, 1967). This separation runs deep in the collective consciousness and has created a rift in the perception of self, others, and Nature.

The worldview of separation is locked in a feedback loop that reinforces daily experiences of self, community, and Nature (Wahl, 2016). Because worldviews act as a lens for interpreting reality, there is a reciprocal aspect to worldviews. Worldviews affect the interpretation of experiences and this filter leads humans to perceive in ways that reinforce existing worldviews and established beliefs and attitudes (Sewall, 1998; Stern et al., 1995). This reinforcing dynamic currently perpetuates a reductionist worldview, making it difficult for

environmental education and sustainable development approaches to shift the dominant Western worldview and achieve more pro-environmental actions.

Given that consciousness and worldviews influence human values, beliefs, attitudes, and behaviors, this research area is central to understanding the current dominant Western relationship to Nature and the conditions necessary for the cultivation of pro-environmental persepectives. Uncovering methods for encouraging ecocentric behaviors and ecological worldviews are paramount to achieve a sustainable human existence on Earth. The facilitation of this process lies at the heart of this research study.

Sustainability education contains concepts, theoretical foundations, research, and praxis methods that can aid in healing the culture of separation. This research study aimed to expand on concepts from sustainability education and pilot the application of regenerative development and design principles to educational design. Given that one of the primary concepts identified in sustainability education is the importance of context, this pilot study was tailored to a specific place, Durango, Colorado. Durango, Colorado is a small town of roughly 20,000 people located in the Southwest region of the United States. Durango lies at the interface between the Colorado Plateaus and Rocky Mountain bioregions and is strongly influenced by a combination of hard rock mining and oil and natural gas extraction, (continued) colonization of the Ancestral Puebloan people, and a strong affinity for Nature through a robust outdoor and adventure-based economy. Durango is also home to a wide range of local and national Nature conservation non-profit organizations as well as Fort Lewis College. The size, characteristics and dynamics of the natural and cultural elements of the area offer opportunities to explore how regenerative development and design principles might inform the design of an education program that is

meant to encourage the formation of ecological consciousness and more strongly connect individuals, communities and Nature to form healthy, thriving socio-ecological systems.

Problem Statement

The worldview of separation and the associated effects of ecological, cultural and economic unsustainability threaten healthy socio-ecological systems. Sustainability education approaches aim to shift this worldview but may be falling short in creating necessary systemic changes. While frameworks exist for linking sustainable education with place, the design of these educational programs may not be informed by place or aimed at creating regenerative socio-ecological systems. These educational designs may also lack elements addressing personal growth and development, Nature connection, or community-based opportunities that allow students to practice implementing sustainability projects that contribute to the health of socio-ecological systems. This research study applied a regenerative methodology to elicit the essence of place to inform the design of a regenerative education program that is co-created and co-designed with place. This research study refers to this process as regenerative education, which is intended to promote an interconnected worldview, attitudes and behaviors.

Purpose Statement

This research project investigated the design of educational frameworks that can contribute to reuniting individuals, communities, and Nature by cultivating an interconnected worldview. The findings in this dissertation were meant to describe subjective and contextualized interpretations of emergent patterns across the socio-ecological system in and around Durango, Colorado. The local patterns identified through the research project informed the design recommendations of a regenerative education program for young adults. The proposed program will teach young adult participants regenerative development and design skills and

engage local cultural and ecological stakeholders in student-initiated regenerative design projects. The premise is that the scales of self, community, and Nature are interdependent and educational approaches that nurture, develop, and weave these together can aid in cultivating healthy socio-ecological systems.

While several frameworks exist for linking sustainable education with place, such as place-based sustainability education, these frameworks look to study place and apply concepts of sustainability education within a local context. These place-based approaches to education are not necessarily informed by place when considering design and may not be intended to contribute to the regeneration of particular socio-ecological systems. The educational framework offered in this study is intended for young adult participants as a means of supporting the transition from adolescence to adulthood. Young adults have been identified as being at a particularly important stage of human development. They have the capacity and desire to embrace personal transformation and initiatory experiences on their journey to becoming young adults (Thompson et al., 1998). Young adults are also collectively situated within the culture as potential drivers of social change (Alden Rivers et al., 2015; Ho et al., 2015). The developmental inclination to embrace personal transformation, including the development of new worldviews and their influence on social change, may be necessary to move towards more sustainable socio-ecological systems. Perhaps a place-informed regenerative education program for young adults can catalyze a large-scale cultural shift in perception and behaviors.

Research Question

This research project was born out of my interest in sustainability education, rites of passage programs for young adults, systems thinking, regenerative design, and the development of ecological consciousness. Applying regenerative development and design principles to

educational design weaves these elements together. It allows for emergent place-based approaches to education that encourage all stakeholders to embrace a systems perspective and an ecocentric worldview. The following are the research questions that framed this work. They are meant to reflect the regenerative development and design approach to understanding place. These research questions were also aligned with data collection methods that were meant to provide insights into various scales of the local socio-ecological system.

Primary Research Question

The primary research question for this study was, *in what ways do regenerative development and design principles uncover needs and opportunities surfaced by Durango, Colorado's cultural and ecological systems to inform the design of a regenerative education program for young adults?* This research question provided the foundation for the dissertation and the overall container for the study. The intention was to explore how regenerative development and design principles can inform educational program design and how to apply this approach within the framework of a dissertation. The following sub-research questions grew out of this primary question.

Sub questions

a. *What role do young adult education programs play in participant relationships with self, Nature, and culture?*

Data for this question were collected in the form of program designer interviews. Various programs exist that attempt to address many of the concepts this project aims to examine such as the cultivation of ecological worldviews, teaching sustainability education curriculum, developing systems thinking skills, providing meaningful rites of passage experiences for young adults, creating opportunities to connect with elders and mentors, deepening relationships with

Nature as a facet of the self, and providing opportunities to discover personal gifts and talents. This research question was posed to guide the structure of a regenerative education program for young adults that would cultivate these desired outcomes. In addition, I wanted to develop my understanding of young adult education programs and establish a community of elders for guidance and wisdom in this work.

b. *What role do local bioregional patterns play in designing and implementing a regenerative education program for young adults?*

The data from this question were collected through a series of bioregional observations within the Animas River Watershed at three different elevations across three seasons. Ecosystem structures and patterns give rise to the uniqueness of particular places, including the development of the cultures that inhabit them. Bioregions are expressions of the underlying principles of ecology and provide insights into the deeper systems that humans are composed of and participate with. A shift towards sustainability will necessitate a return to understanding local ecosystems and working with them rather than against them.

c. *What needs and opportunities do key informants in the Durango, Colorado area describe within the local ecological and cultural systems to inform the design of a regenerative education program for young adults?*

The data from this question were collected through two focus groups with local key informants. The key informants in this research study were selected based on their role within the cultural system in Durango, Colorado, as representatives of organizations that operate within the field of sustainability and or Nature connection and conservation. This research question was posed to deepen my understanding of the existing culture in Durango, Colorado, and provide insights into local needs and opportunities that could inform the design of the regenerative

education program. A secondary purpose for this question was to aid in identifying a potential project design team to carry the work forward. When combined with the data from the bioregional observations, the key informant data deepened my understanding of the local socio-ecological system. In addition to providing insights into the cultural system in Durango, Colorado, these key informants and their organizations may play a critical role in developing the regenerative education program and form the backbone of the cultural network that the program will integrate with to be effective. This approach can aid in avoiding a colonizing approach to educational design that is implemented without consideration of the people who inhabit a place.

d. *How might a regenerative education program for young adults support their capacity for personal, ecological, and cultural regeneration?*

The data from this question were collected through individual interviews with young adults living in the Durango, Colorado, area. The intention of this question was to elucidate an understanding of how this population relates to the socio-ecological systems in Durango, Colorado and what needs and opportunities interface with a regenerative education program. Just as the application of regenerative development and design principles is meant to integrate with and support the health and vitality of a particular place's existing cultural and ecological systems, regenerative education desing is also meant to diverge from approaches that dismiss the perspectives of the students. In this case, it was important for the young adults to have the opportunity to describe what would be important to them in a regenerative education program and to highlight some of the experiences they feel would support their development.

Research Assumptions

Philosophical Underpinnings of The Research Study

In scientific philosophy, two overarching perspectives have long existed: rationalism and relativism. Rationalism looks to logic and reason as the ultimate source of knowledge and understanding which forms the basis of objective science (Hollis & Lukes, 1982). Relativism believes that knowledge and understanding are contextual and subjective, and that scientific inquiry depends on the conditions and lenses applied to inquiry (Baghramian, 2004). While rationalism seeks a singular objective "truth," relativism creates space for multiple perspectives and ways of thinking and knowing. While I do not subscribe to an extreme relativistic worldview that "anything goes," I do believe that knowledge and understanding are contextual. I believe that scientific inquiry is, in fact, a relational enterprise. As a result, meaning and knowledge are continuously being co-created in the dynamics that take place between the researcher, the research phenomenon, and the co-researchers (typically referred to as research participants). This continuously evolving process of co-created reality leads to emergent meaning and understanding that is captured as a snapshot in time and place by the researcher through their own inescapable and evolving lenses and positionality.

Complexity Lens

This research study applied a complexity lens, which aligns with the informing theories outlined in the literature review chapter. A complexity lens provides a relevant and contextualized paradigm for this research study and can be used in qualitative research to understand and explain complex systems (Gear et al., 2018). Complexity diverges from reductionist and linear approaches to research and instead sees the research process as containing feedback, emergence, connectedness, and self-organization. Complexity perceives reality as a series of nested systems where interactions between the individual parts of the systems influence the larger systems, and that the resulting shifts in the larger systems feed back into the parts of

these systems, causing a change at both the individual and system levels. The interaction between the parts and the whole plays a significant role in this research and the understanding of both the research phenomenon and the components of the research such as the literature, data, and findings.

The field of complexity seeks to integrate concepts from systems thinking, quantum mechanics, chaos theory and postmodern social sciences in pursuit of a means of understanding and interacting with a highly interconnected and subjectively experienced reality (Heylighen et al., 2006). Complexity not only reflects our growing understanding of the ecological and scientific aspects of reality, it extends to social sciences, including education (Hager & Beckett, 2019). At its core, complexity reflects an ontological and philosophical perspective of relationality, where reality is constructed of, perceived through, and experiences as a dense network of relations. This shift to understanding, interacting with and being able to design human systems in a world of complex connections is a shift from the worldviews that have previously prioritized distinct objects or elements instead of the connections and relationships between things (Hager & Beckett, 2019).

There has been growing support for applying complexity perspectives in educational research (Jacobson, 2019). According to Szekely and Mason (2019) educational interventions are highly contextual and should be carried out as developmental projects that take complexity and the systems in which the interventions are taking place into consideration. A complexity approach to education, teaching and learning that cultivates systems thinking skills may be necessary to help students develop the skills and knowledge that will be required for working with densely connected topics such as climate change, social justice and inequality, poverty and biodiversity loss (Willamo et al., 2018).

Using a complexity lens, I approached the research study as a complex adaptive system that included the various elements of the research design. Complex adaptive systems contain such properties as regeneration, self-organization, autopoiesis, transformation, self-organization, and emergence (Hauk, 2014). These systems are robust, resilient, and capable of adapting to changing conditions (Robinson & Cole, 2015). Complex adaptive systems continue to self-organize into higher orders of complexity and resilience (Hauk, 2014).

Regenerative development and design are strongly aligned with a complexity lens as the assumption underlying regenerative projects is that socio-ecological systems can work in co-evolving processes that continuously adapt to change in mutually beneficial ways (Mang & Reed, 2012a). A complexity lens also informed the research study through collecting and interpreting data at multiple scales. The research study gathered data from existing post-secondary sustainability education programs and data from the Durango, Colorado, socio-ecological system, including bioregional observations, key informant focus groups, and young adult interviews.

Moving From Sustainability to Regeneration

While sustainability education has become a dynamic and robust field of research and implementation in k-22 education, it is slowly giving way to the growing field of regenerative systems. Regenerative approaches attempt to move beyond the idea of sustainability which aims to simply maintain the current state of a system and cause no additional harm. There is an expanding awareness that sustainability will not be enough to curb the current climate crisis or generate the necessary shifts in thinking to move away from the current colonizing and extractive culture of separation. Instead, regenerative approaches embrace the perspective that systems can

continually evolve, generate value, and increase the capacity of the other systems they interact with (Mang & Reed, 2012a).

According to Mang and Haggard (2016), the genesis for regenerative development and design is the need for shifting the fundamental belief that environmental problems are symptoms of a fractured relationship between people and Nature. The core issue, they proposed, is cultural and psychological rather than technological. Regenerative development and design promote a shift from seeing the self as separate from Nature to perceiving the self as a part of a co-evolutionary whole, in a symbiotic relationship with the living places we inhabit.

The Hermeneutic Circle/Spiral

This dissertation research project is designed using the hermeneutic spiral as an organizing framework for guiding my interpretation and understanding of the research phenomenon, in this case, the regenerative development and design of a young adult education program (Gummesson, 1999; Packer & Addison, 1989; Patterson, & Williams, 2002). Hermeneutics refers to the study and interpretation of text and highlights the relationship between parts of the text and the whole text when distilling meaning and understanding (Bentz, & Shapiro, 1998; Gadamer, 2008; Schleiermacher et al., 1978). The hermeneutic paradigmatic approach is congruent with this research study for several reasons. Hermeneutics recognizes the intimate relationship between the whole and the parts of systems and reflects a Goethean approach to understanding the nature of reality (Bortoft, 1996). This is to say that Goethe offered a counter perspective to the reductionist scientific view. Goethean science embraces a worldview of interconnectedness and a subjective, relational, phenomenological interpretation of human experience and consciousness (Reynolds, 2007; Whitelegg, 2003). Hermeneutics also critiques the Cartesian worldview of separation and false dualisms. According to Bortoft,

> The reciprocal relationship of part and whole, revealed here, clearly shows us that understanding is not a logical act of reasoning because such an act depends on the choice of either/or. The paradox arises from the tacit assumption of linearity - implicit in the logic of reason- which supposes that we must go either from part to whole or from whole to part. Logic is analytical, whereas meaning is evidently holistic, and hence understanding cannot be reduced to logic. We understand meaning in the moment of coalescence when the whole is revealed in the parts so that together they disclose the whole. It is because meaning is encountered in this "circle" of the reciprocal relationship of the whole and the parts that we call it the hermeneutic circle. (Bortoft, 1996, p 9)

This approach also highlights the importance of the relationship between the researcher, topic of inquiry, and research participants as an integrated system. Hermeneutics embraces many of the underlying theoretical foundations of the field of sustainability education, including a complexity lens, the importance of context, non-linearity, iterative processes, emergence, and the recognition that interpretations of meaning are snapshots in time and not static absolute truths (Paterson & Higgs, 2005). Hermeneutics also holds that the interpretation of text depends on the interpreter's positionality (Bentz & Shapiro, 1998).

Engaging in a hermeneutic interpretation of text and other phenomenon has been described as a circle due to the cyclical nature of engaging with the parts of the text and then returning to the whole, only to revisit the parts again. According to Paterson and Higgs (2005),

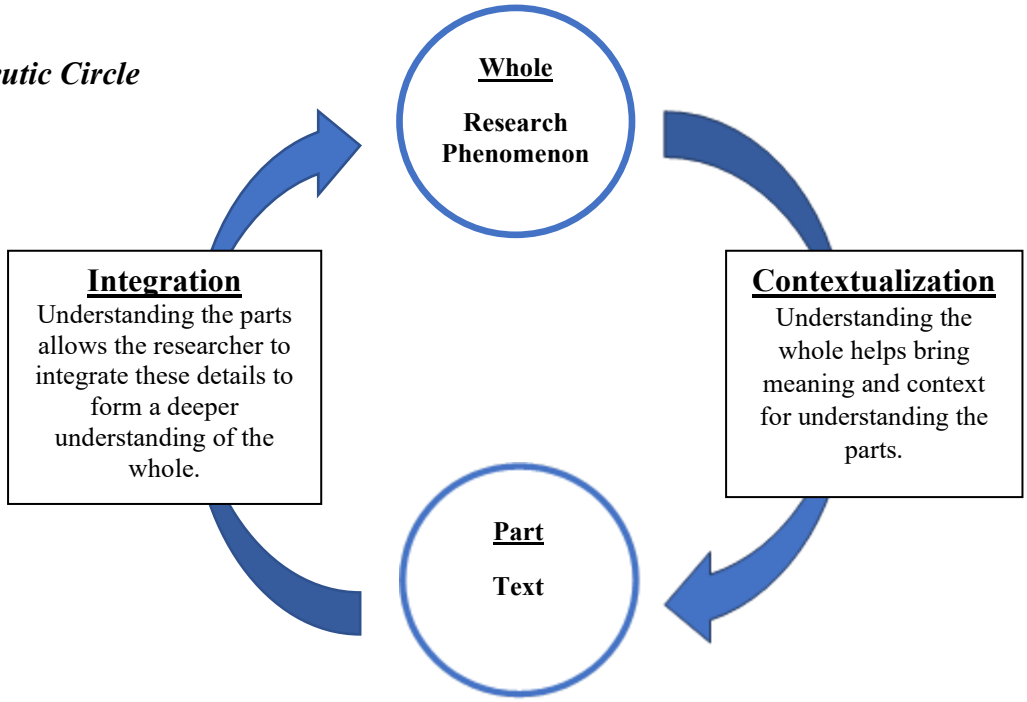
> Using the concept and practice of the hermeneutic circle, researchers recognize that the phenomenon or object of comprehension is understood as a whole because its parts are integrated in the whole and define it. At the same time, researchers recognize how the

whole contextualizes each of the parts, seeking to illuminate the phenomenon within its context. (p. 345)

The hermeneutic process requires that the researcher continuously moves between the parts and the whole, which can lead to an ever-deepening understanding and interpretation of the research phenomenon (Bortoft, 1996).

Figure 1

Hermeneutic Circle



This project is fractal in design, where the whole is composed of the parts, and conversely, the parts contain the essence of the whole to elicit an understanding of the research phenomenon. This study is meant to further the application of regenerative development and design as a research methodology. Regenerative development and design practitioners often use a hermeneutic approach to develop an understanding of place. In this study I expanded the application of this approach and used hermeneutics as the organizing framework throughout the entire dissertation (Gummesson, 1999; Packer & Addison, 1989). The hermeneutic circle

provides a continuous thread, offering a consistent structure to guide the project, and inquiry process, while reflecting a relational worldview.

As I move through the circle, again and again, each time gaining new insights, the parts and the whole take on new meanings. This process of deepening understanding by moving between the parts and the whole begins to take the shape of a spiral rather than a circle. Circles simply return to the same starting point, whereas spirals depict a continuous path around a central point or phenomenon (Paterson & Higgs, 2005). Therefore, each chapter of the dissertation is a pass through the hermeneutic circle where the parts of the dissertation shed new light on the research phenomenon (whole), and the depth of understanding of the research phenomenon creates new interpretations and intricacies in the parts. This continuous process is presented as a hermeneutic spiral (Figures 2 & 3).

Entering the hermeneutic spiral, I am aware of my implicit biases and positionality, which form my current understanding of the research phenomenon. As I move into the inquiry and research process from this initial understanding, I continuously pass through the hermeneutic spiral as I gain expanding insights into the research phenomenon. My interpretation of the meaning of the text in the literature review and transcripts from the data is a journey of co-creation that is fashioned from my relationship with the text. The meaning I derive only represents a snapshot in time which I could interpret differently with more passes through the circle based on my ever-changing biases, assumptions, and experiences.

Figure 2

Hermeneutic Spiral as Experienced by the Researcher in This Study

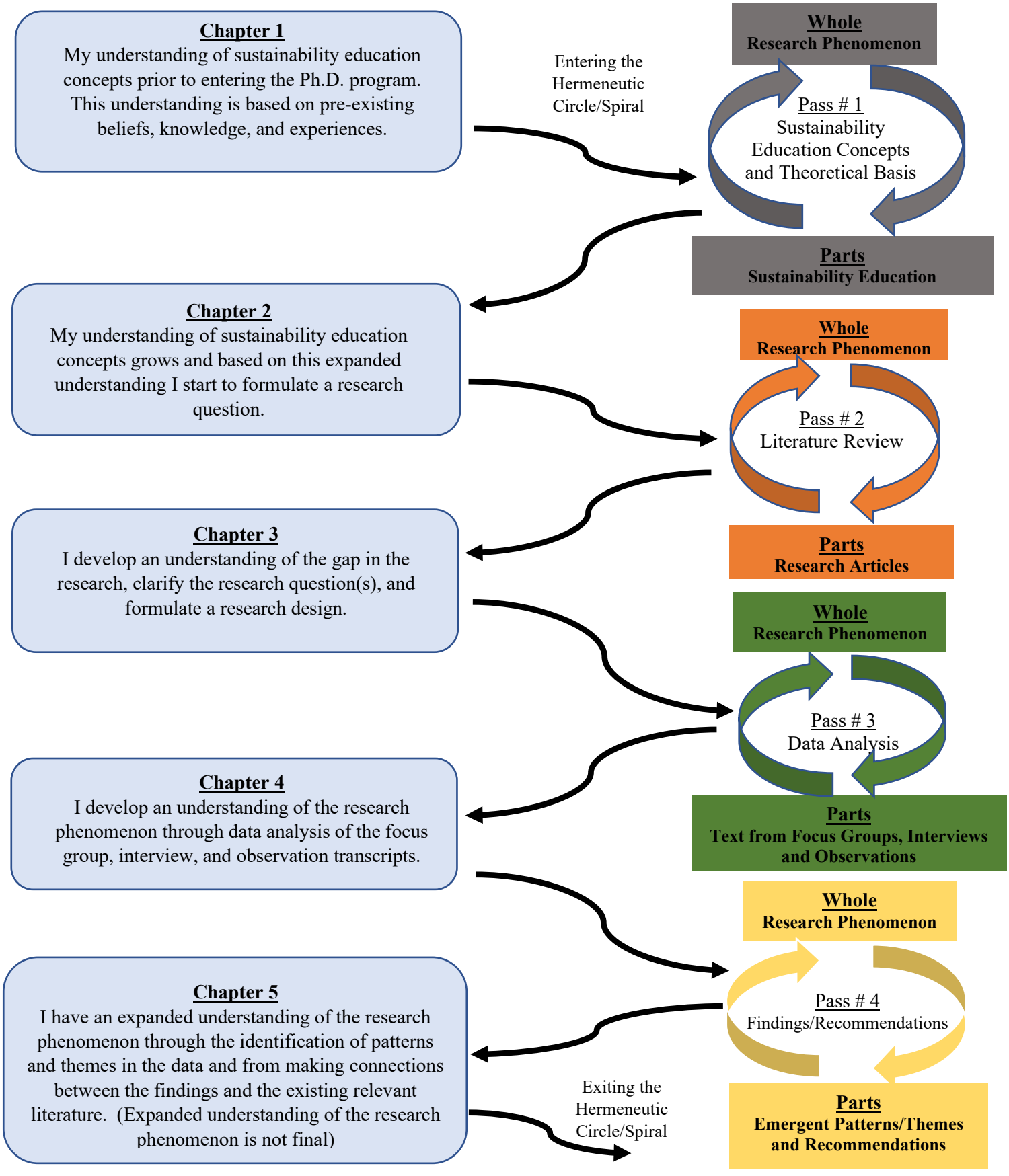


Figure 3

Depiction of the Hermeneutic Spiral Structure of the Dissertation Chapter 1

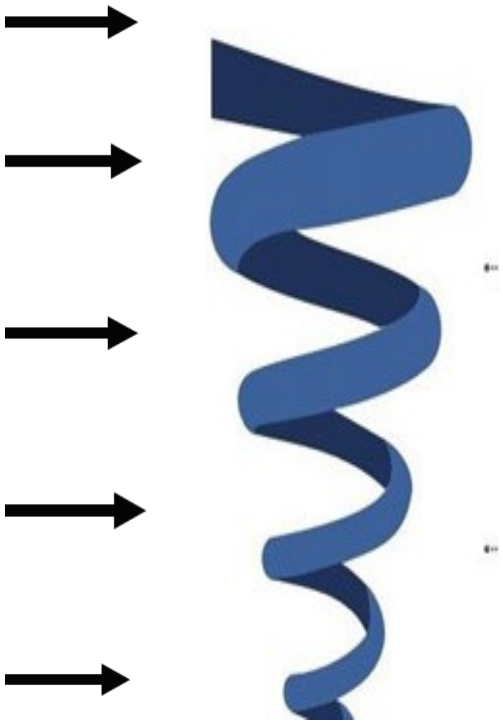
Pass # 1: Chapter 1 - Understanding of the research phenomenon (whole) through theoretical foundations of Sustainability Education course work (parts).

Pass # 2: Chapter 2 - Understanding of the research phenomenon (whole) through the literature review/articles (parts) and a growing understanding of the gap in the research.

Pass # 3: Chapter 3 - Understanding of the research phenomenon (whole) deepens through the research design and the implementation of the methodology and methods (parts).

Pass # 4: Chapter 4 - Understanding of the research phenomenon (whole) through a hermeneutic analysis and interpretation of the research data/text (parts) and the emergence of themes.

Pass # 5: Chapter 5 - Understanding of the research phenomenon (whole) through a hermeneutic interpretation of the research data/text (parts), the integration of the research into existing literature and the recommendations as applied through the 9 Regenerative Development and Design Principles.



Research Significance

The current dominant Western culture perpetuates social, political, and economic systems that are neither equitable nor sustainable. These human-generated systems are damaging the biosphere and its ability to support life on Earth. Many scholars have suggested that the current ecological crisis is a crisis of perception (Wahl, 2016). According to Capra and Luisi (2016),

> As the twenty-first century unfolds, it is becoming more and more evident that the major problems of our time – energy, the environment, climate change, food security, financial security – cannot be understood in isolation. They are systemic problems, meaning they

> are all interconnected and interdependent. Ultimately, these problems must be seen as just different facets of one crisis, largely a crisis of perception. It derives from the fact that most people in our modern society, and especially our large social institutions, subscribe to the concepts of an outdated worldview, a perception of reality inadequate for dealing with our overpopulated, globally interconnected world. (p. xi)

These scholars argue that a shift toward developing an ecological worldview and an embodied ecological consciousness may guide systemic changes toward sustainability.

Young adult experiential education immersion programs that combine the cultivation of ecological worldviews and provide opportunities for students to engage in culturally relevant and viable regenerative design projects may help initiate cultural change towards sustainability. By introducing a regenerative education program into the Durango, Colorado socio-ecological system young adults could have the opportunity to participate in an educational experience that supports the exploration of their place in the world and connects them in more meaningful ways to themselves, their communities, and the ecosystem they inhabit. A regenerative education program could also contribute to the development of ecological consciousness and systems thinking as well as connect participants with mentors and elders could help them identify their gifts and talents and role in society. Teaching them regenerative development and design project skills could allow them to engage in local regenerative projects that connect with their passions and benefit the health and vitality of the local community and bioregion while moving away from a worldview of separation.

Summary

The Prescott College Sustainability Education Ph.D. program has led me on an incredible learning journey, rich with opportunities for personal development. The program has

significantly impacted my perception of reality, my life, and my career. I have encountered transformative learning experiences that have caused me to question my attitudes, beliefs, and worldviews. I have been elated, frustrated, and challenged as I have struggled to peer through the veil of the dominant Western culture and perceive what might be possible in a more just, equitable, and sustainable culture. I have wrestled with my positionality as a white male and perpetrator of colonizing thoughts, speech, and action. I have embraced systems thinking and have started to comprehend the interconnected and relational world in which I dwell.

In this research study, I proposed an educational program can be designed to encourage a shift from a worldview of separation to a worldview of interconnectedness and that the design of such an educational program may be most effective if it is contextualized and informed by place. Through an investigation of local social and ecological dimensions, the structure and pedagogy of the educational program may be co-designed and co-evolve with place.

Activating a regenerative lens helped me expand my worldview as I embraced the dissertation research project as a catalyst for shifting my way of thinking. It affected my research decisions, interactions with co-researchers, perceptions of Nature and my place within it, as well as my ability to engage local community members and resources to stitch human activity back into the patterns of Nature in the pursuit of a culture that embraces a relational and holistic cosmology. Some examples of this in my study include foregrounding the local bioregion as a co-researcher and attempting to “listen” to the ecosystem as an important stakeholder in the research and eventual educational design. I also included young adults as co-researchers, as I wanted to take a non-hierarchical approach to educational design, and I did not want to assume I knew what would be of value to them without including their perspective.

To inform this dissertation research project, I identified a variety of aspects of sustainability education that I perceived to be critical to the regenerative design of post-secondary sustainability education programs. These aspects of sustainability education are explored in chapter two of the dissertation through a literature review. In the literature review I survey regenerative development and design, systems thinking, ecological consciousness, the socio-ecological systems framework, place-based education, post-secondary programs, and rites of passage experiences for young adults in the dominant Western culture. I identify "gaps" in the literature that further clarified the research question and sub questions. Cumulatively, the literature review served as a guidepost that informed my thinking, inquiry process, research design, project implementation, data collection, and analysis in the pursuit of contributing to the body of knowledge in sustainability education and informing the design of a regenerative education program specific to the Durango, Colorado socio-ecological system.

Chapter three offers an overview of the methodology, methods, and research design. A rationale is provided for the use of a regenerative methodology to explore the research questions. This chapter also details how the regenerative development and design principles informed the selection and use of data collection methods including interviews, focus groups, and bioregional observations. Chapter three concludes with a detailed explanation of the and data analysis processes which is based on a hermeneutic approach to qualitative studies (Patterson, & Williams, 2002).

Chapter four of the dissertation presents the findings unearthed from the interviews, focus groups, and bioregional observations. The findings are correlated with eight of the regenerative development and design principles and presented as insights into three scales of the local socio-ecological system: the bioregion (Nature), key informants (community), and young adults

(self). Multiscale themes are presented that highlight connections between the three scales of participant categories and analysis and one of the regenerative development and design principles.

Chapter five offers the interpretation, discussion and recommendations based on the findings of the study and relevant literature. This chapter details the impacts a regenerative education program could have on the Durango socio-ecological system. The findings are then extrapolated as a framework that could be applied to other socio-ecological systems and various regenerative projects which I refer to as the Regenerative Socio-ecological Systems Framework. The chapter also explores the relevance of this study to palace-based education and young adult rites of passage experiences within the dominant Western culture. The chapter concludes with suggested areas for further research and the potential to link the framework in this dissertation with the Regenerative Development Evaluation Tool developed by Gibbons et al. (2020).

Chapter 2: Literature Review

Introduction

This chapter represents the second pass through the hermeneutic spiral. My understanding of the research phenomenon (whole) continued to expand through the process of identifying, reading, and interpreting significant literature (parts) related to the area of study. This process helped me understand gaps in the literature and informed my research design.

Figure 4

Depiction of the Hermeneutic Spiral Structure of the Dissertation Chapter 2

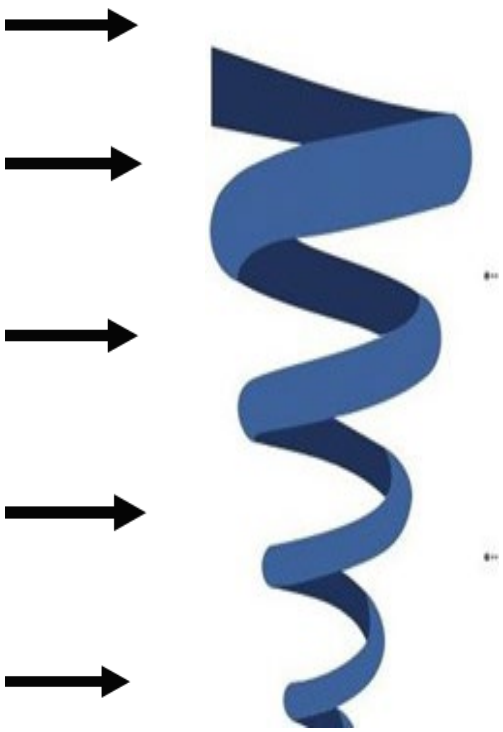
Pass # 1: Chapter 1 - Understanding of the research phenomenon (whole) through theoretical foundations of Sustainability Education course work (parts).

Pass # 2: Chapter 2 - Understanding of the research phenomenon (whole) through the literature review/articles (parts) and a growing understanding of the gap in the research.

Pass # 3: Chapter 3 - Understanding of the research phenomenon (whole) deepens through the research design and the implementation of the methodology and methods (parts).

Pass # 4: Chapter 4 - Understanding of the research phenomenon (whole) through a hermeneutic analysis and interpretation of the research data/text (parts) and the emergence of themes.

Pass # 5: Chapter 5 - Understanding of the research phenomenon (whole) through a hermeneutic interpretation of the research data/text (parts), the integration of the research into existing literature and the recommendations as applied through the 9 Regenerative Development and Design Principles.



This chapter offers a selective review of academic literature to provide a foundation for applying regenerative development and design principles to the design of educational programs.

The following research is situated within the field of sustainability education. It explores the informing theories of socio-ecological systems, place-based education, post-secondary sustainability education programs, rites of passage, and regenerative development and design. The literature review aims to provide a rationale for designing a regenerative education program for young adults specific to place. The desired outcome of this research project was to identify needs and opportunities in Durango, Colorado, for developing a place-based regenerative education program that can contribute to cultivating a thriving socio-ecological system.

Sustainability Education

The field of sustainability education was built on the premise that education can play a vital role in generating cultural change and that new ways of thinking and acting are required in light of the interlinked economic, social, and ecological issues facing humanity. According to Corcoran and Wals (2004),

> the assumption of human culture has been that the beauty and bounty of Earth would be transferred across generations and that the process of education would transfer the values, skills, and knowledge to survive and thrive in the cultural and natural systems of which we are a part. (p. 4).

Unfortunately, mainstream education systems in the dominant Western culture perpetuate the social structures and worldviews that are failing society and the ecosystem (Freire, 2000; Nolet, 2015). Sustainability education has been put forth as a response to these destructive approaches to education in hopes of offering alternative ways of knowing and being.

Sustainability education is a collection of such disciplines as; ecopsychology, social ecology, deep ecology, ecofeminism, native science, Indigenous ways of knowing, traditional ecological knowledge, nature-based human development models, transformative learning, social

justice, ecojustice, systems thinking, environmental education, permaculture, transformative and sustainable leadership, circular economies, and ecology-based design. These sustainability education disciplines aim to inform an interconnected worldview that deepens personal and collective understanding of how to create sustainable socio-ecological systems (Wahl, 2016). Nolet (2015) describes sustainability education as education that "seeks to equip learners to deal with the kinds of challenges that arise from the interconnectedness of environment, culture, society, and economy that seem to typify life in the 21st century" (p. 7). This approach to education aims to help students more fully understand the complexity of interactions between humans and Nature and provide a path toward sustainability development (Kishita et al., 2018).

Education influences, defines, and transmits cultural worldviews. According to Mandikonza and Lotz-Sisitka (2016), "education has the potential to facilitate catalytic transformation of society through development of understandings and actions that contribute to more sustainable social practices" (p. 108). Sustainability education aims to offer experiential learning opportunities for students to engage in personal development, systems thinking, and social, environmental, and economic behaviors that preserve the long-term viability of human and natural systems (Higgs & McMillan, 2006; Medrick, 2013). This study is squarely situated within the field of sustainability education. It draws on systems thinking, ecological consciousness, socio-ecological systems, place-based education, rites of passage, gap year program research, and regenerative development and design to inform the design of a place-informed educational program for young adults.

Ecological Consciousness

One important concept in sustainability education is reinforcing the idea that humans are not separate from Nature. Ecological consciousness has been used to describe a state of

consciousness that experiences reality from an ecocentric perspective (Washington et al., 2017). Ecological consciousness consists of a relational and holistic understanding of reality where humans and Nature are experienced as deeply entwined. According to Morris (2002), "consciousness and environment are entangled, confused, co-created, and co-dependent. There is no way to separate consciousness from the environment without doing violence to the very system that sustains us" (p. 579). This is an integrated state of consciousness that looks to re-identify human mental activity, values, attitudes, beliefs, and actions as facets of Nature (Morris, 2002; White, 2011; Sewall, 1998).

Ecological consciousness is about intimately experiencing Nature. According to White (2011), "ecological consciousness is a form of consciousness that is characterized by a psycho-spiritual connectedness with nature" (p. 41). Many researchers have identified the cultivation of an ecological consciousness as the most critical leverage point in bringing human culture back in balance with Nature (Capra & Luisi, 2016) and allowing humans to live within the limits of the ecosystem (Rockström et al., 2009). According to Wahl (2016), "the most up-stream transformation that has to take place before we set out to redesign the human presence on Earth is to deeply question our way of thinking, our worldview, and our value systems" (p. 20). Developing an ecological consciousness begins with an internal metamorphosis that results in the formation of an ecological self. In this state of being, the individual is part of the collective human and more-than-human community (MacMurray, 1961). The concept of self expands to widening scales of being, encompassing others, community, Nature, and the Universe (O'Sullivan & Taylor, 2004).

Systems Thinking

The need for a large-scale shift in mental models from mechanistic worldviews to ecological consciousness has been compared to the radical leap in paradigm evolution that took place when Copernicus discovered that Earth was not at the center of the Universe (Capra & Luisi, 2016; O'Sullivan & Taylor, 2004; Uhl, 2013). One of the primary attributes of an ecological consciousness that can bring about sustainability is the development of systems thinking (Williams et al., 2017). As humans look to shift the dominant worldview of separation from independence to interdependence, it is essential to develop the ability to think, see, and act from a systems perspective.

Systems thinking is based on observing and understanding patterns and identify relationship structures in complex systems rather than relying on linear cause and effect models (Brown, 2017). Systems thinking can be instrumental in cultivating an ecological worldview (Davis & Stroink, 2016), which, "depicts the central metaphor of the universe as a living system or system of systems, specifically, an ecology" (Benne & Mang, 2015, p. 6). Systems thinking can allow humans to shift their focus from reductionist and mechanistic thinking rooted in objective science to holistic ways of perceiving based on the principles of ecology (Capra & Luisi, 2016). This shift in focus can have a transformative effect on consciousness, allowing people to begin to operate from a worldview of relationships rather than separation. According to Sterling (2009), "systemic thinking can help sow the seeds of an ecological worldview. It can help facilitate the critical reflexivity - or deep questioning of assumptions" (p. 77). Applying a systems perspective to human-designed systems can help these systems better integrate with ecosystems. By accessing systems thinking, humans can start to embody worldviews that mimic the complexity and interconnectedness of Nature. It has been suggested that systems thinking is a

sustainable or regenerative paradigm compared to the maladaptive or degenerative paradigm of modernist thinking (Sterling, 2009).

Systems thinking played an important role in this research study in multiple ways. First, the research design was approached from a systems perspective where data were collected at multiple scales across the socio-ecological system and analyzed and interpreted through a complexity lens. Systems thinking also impacted the application of regenerative development and design principles throughout the education design recommendations.

Socio-ecological Systems Framework

Researchers have recognized the need to develop methods for studying and analyzing the connection between human and natural systems. One such approach evolved out of research by Berkes and Folke (2000) aimed at understanding the connection between ecosystems and institutions focused on resource management and resilience in these systems. This work gave rise to the social-ecological systems framework or what is commonly referred to as the socio-ecological systems framework. This framework applies systems thinking and recognizes that social and ecological systems are entwined complex adaptive systems that change over time through a process of co-evolution (Colding & Barthel, 2019; Martinez-Fernandez et al., 2021; Partelow, 2018). Socio-ecological systems refer to the interconnected worldviews, institutions, and technologies that comprise the coupled human-nature system and all the interactions that take place within this system, creating a culture that is fully integrated within an ecological context (Beddoe et al., 2009; Berrouet et al., 2018).

According to Fischer et al. (2015), “social-ecological systems are complex adaptive systems characterized by feedbacks across multiple interlinked scales that amplify or dampen change. These feedbacks underlie the capacity of the biosphere to sustain human progress and

development" (p. 145). The socio-ecological systems framework has been applied in a wide range of empirical research (Partelow, 2018). This framework has evolved as a tool more recently to engage in the study and analysis of the sustainability of these systems (Ostrom, 2009). One of the strengths of the socio-ecological systems framework identified in the research is that this approach looks to study specific places and recognizes the uniqueness of different coupled human and natural systems (de Vos et al., 2019; Masterson et al., 2017). The socio-ecological framework has also demonstrated the ability to be a flexible research approach and has been applied in various studies (Colding & Barthel, 2019). While this ability to be widely adaptable is one of the strengths of the socio-ecological framework as it can be adjusted to meet different research outcomes in specific contexts, this has also been noted as an area that requires further refinement. The research indicates that the socio-ecological framework lacks a clear definition, research methods, and data collection and analysis approaches (de Vos et al., 2019; Herrero-Jáuregui et al., 2018; Partelow, 2018). This dissertation attempts to add to this body of knowledge.

Place-based Education

Place-based education is designed to increase student learning through hands-on education while enhancing the quality of life in the community through improved care of natural resources and addressing regional social and economic issues (Powers, 2004). The philosophy underlying this educational approach can be traced back to Dewey and the creation of the Chicago Lab School, which attempted to reduce the separation between school-based learning and real-world learning (Smith, 2002). Dewey recognized the difference between learning concepts and learning directly from experience. Therefore, place-based education emphasizes

experiential learning contextualized by the socio-ecological systems in which education takes place.

Place-based education is a transdisciplinary and cross-curricular approach that leverages the local ecology and culture to teach content across the curriculum while infusing the school environment with local businesses and civic organizations (Sobel, 2004). Place-based education can take an active role in honoring local Indigenous cultures while contributing to a decolonizing process (Scully, 2012). Gruenewald (2003) suggests that place-based education and critical pedagogy could be merged into what he referred to as a critical pedagogy of place. A critical pedagogy of place aims to simultaneously approach place-based learning as a decolonizing strategy while helping students and community members learn to reinhabit particular places. This approach shares many of the philosophical aims of sustainability education. It can play an important role in regenerative educational approaches that reconnect people to the ecology and culture of particular places while promoting socially just regenerative socio-ecological systems.

Place-based education can help students grow their affinity for specific places within ecosystems. Spending time getting to know the local forest, watershed, desert, flora and fauna can allow the bond between individuals and the biosphere to deepen. By facilitating repeated experiences in the local ecosystem, place-based education builds a sense of caring and responsibility for a Nature that is tangible and contextualized rather than Nature becoming an abstraction concept (Orr, 2004).

Regenerative Development and Design

Ecological design has been linked to socio-ecological systems and offers a means of expanding ecological consciousness and encouraging regeneration from local to global scales (Mang & Haggard, 2016). Ecology-based or ecological design is a design field rooted in the

principles of ecology and aims to apply these principles to human endeavors at multiple scales. Ecological design approaches include permaculture, biophilic design, biomimicry, traditional ecological knowledge, and regenerative design (Du Plessis & Brandon, 2015). The ecological design process that most prominently promotes ecological consciousness and encompasses many of the concepts of the other disciplines within the field of sustainability education can be found in regenerative development and design.

The regenerative development and design field is based on a methodology developed by researchers Mang and Reed (2012a) at the Regenesis Group and is closely aligned with ecological consciousness and place-based education. According to regenerative development and design pioneers Mang and Haggard (2016),

> the genesis for this work is rooted in a fundamental belief that environmental problems were symptoms of a fractured relationship between people and Nature. The core issue, they proposed, was cultural and psychological, rather than technological. Addressing it would require a transformation in how humans played their roles as members of an ecologically connected planet. We would need to shift from seeing ourselves as separate from Nature to seeing ourselves a part of a co-evolutionary whole, in symbiotic relationship with the living places we inhabit. (p. XIV)

This approach allows various types of cultural systems to be redesigned from the perspective that humans are Nature and have an important role to play within the environment.

Regenerative development and design were initially applied to encourage the development of ecocentric worldviews within the resource-heavy field of the built environment (Mang & Reed, 2012a). Regeneration has since been expanded to a wide range of human endeavors within socio-ecological systems such as organizational systems, education systems,

food systems, political systems, economic systems, energy systems, and transportation systems. This design approach aims to create the conditions for systems to evolve and encourages project stakeholders to take an active step as co-designers (Mang & Reed, 2012a).

Regenerative design processes are not housed in a specialized domain with limited access for the masses. Regenerative development and design are available to everyone as humans engage in design activities daily. According to Wahl (2016),

> We are all designers! We all co-create the world we live in through our relationships and our behavior as citizens, community members, and consumers. We all have real and perceived needs, and we all design our own strategies to meet those needs. We all have intentions about what we would like to do and what kind of change we would like to see in the world; the ways we act (or fail to act) in accordance with those intentions are acts of design. Our intentions influence both our actions and our inaction, they shape how we co-create the world. (p. 123).

As systems designers, humans can leverage regenerative development and design principles to create healthy, thriving socio-ecological systems.

In order to implement a regenerative development project, a designer must have a deep understanding of place. The regenerative methodology identifies three aspects of place: pattern literacy, story of place, and potential (Mang & Haggard, 2016). Pattern literacy is the ability to develop a deeper understanding of the patterns of the local ecosystem so that human systems can be designed to support and harmonize with bioregional patterns rather than work at cross purposes. Understanding the story of place helps to identify the essence of place both culturally and ecologically. The story of place can act as a unifying thread that provides structure, and shared meaning and purpose for regenerative development and design projects. Potential within

systems is a central concept in regenerative development and design as it shifts the focus away from problems to solution-oriented designs that allow project stakeholders to embody their capacity building values. The field of regenerative development and design draws on the interrelated fields of living systems thinking, permaculture, and the developmental change process. These contributing fields are prevalent throughout the theory and practice of regenerative development and design, including the implementation of nine guiding principles.

Permaculture

Permaculture design is one of the three underlying theories of regenerative design (Mang & Haggard, 2016). Permaculture is an ecological design system created in the 1970s by Mollison and Holmgren as a proactive, creative, and practical response to the growing ecological crisis (Holmgren 2002). Permaculture creates systems that support humans, require minimal inputs, and reduces harmful effects on the ecosystem. Permaculture design mimics natural systems by focusing on diversity and "placing things in relation to each other so that beneficial relationships can be formed between them" (Stibbe, 2009, p. 65). This approach increases the system's yields while decreasing the system's energy needs.

Permaculture refers to permanent agriculture and permanent cultures because these human systems are designed to integrate with natural ecosystems' diversity, stability, and resilience (Mollison, 1997). The underlying philosophy of permaculture is that human-created systems should work with the patterns and principles of Nature instead of against them. Therefore, permaculture relies on the values of people care, earth care, and fair share, as well as twelve guiding design principles based on ecosystems' patterns (Holmgren, 2002; Mollison, 1988).

There is a growing awareness of the colonizing aspects of this field as the knowledge that supports the design science found in permaculture is not new and was not "created" by Mollison and Holmgren (Watson, 2015). Instead, Indigenous cultures cultivated traditional ecological knowledge over thousands of years (Cajete, 2016; Kimmerer, 2013). While this dissertation research study applies concepts from permaculture, I recognize and honor the cultures that pioneered this knowledge and continue to expand it to this day. To honor traditional socio-ecological knowledge, my research design incorporates input from local Indigenous tribal members as co-researchers.

Living Systems Thinking

The second underlying theory of regenerative design is the field of living systems thinking (Mang & Reed, 2012a). Living systems thinking supports the development of an ecological worldview and systems thinking based on perceiving the world as a set of nested and interconnected dynamic systems (Mang & Reed, 2012a). Charles Krone developed the living systems thinking concept which is based on the levels of work framework. The living systems framework suggests that every living system engages in four levels of activity to achieve an autopoietic state of existence in a world that is composed of interconnected living systems (Mang & Reed, 2012a). These four levels of work include: operate, maintain, improve, and regenerate.

Developmental Change Process

The third primary field that influences regenerative design is the developmental change process. Developmental change process aims to encourage a shift in the process of project design. Regenerative design encourages the cultivation of co-designers, co-evolution, and system actualizing by focusing on building capacity and approaching the design process from a place of

problem-solving and conflict resolution where emergence is highly valued (Mang & Reed, 2012a).

Post-secondary Sustainability Education Programs

Young adult post-secondary education programs within and outside the academy have emerged as prominent places in the socio-ecological system for furthering the agenda of sustainability education. These programs attempt to encourage the development of ecocentric worldviews and the associated attitudes and behaviors that flow from embodied and deep understanding of the ecological self and ecological consciousness. These educational programs bring together concepts associated with sustainability education, systems thinking, and place-based and community-based education.

Young adult education programs that promote sustainability include first-year programs and other undergraduate courses designed to address the underlying ontological and epistemological worldview of separation. Post-secondary programs that promote sustainability and regenerative cultures also include a wide range of programs that operate independently from higher education. Many of these programs have incorporated place-based and community-based educational approaches into their curriculum to support building student capacity to bring theory into practice.

Research has been conducted on several post-secondary sustainability education programs that utilize place-based and community-based pedagogy to increase students' capacity for applying concepts of sustainability in the context of social, political, and economic systems (Brundiers et al., 2010; Jiusto et al., 2013; O'Brien & Sarkis, 2014). These programs use a wide range of praxis pedagogies, including service learning, internships, place-based education, project-based education, community-based education, and shared action learning. Place-based

post-secondary sustainability education programs aim to address the knowledge-action gap that has been prevalent in environmental education and has prevented the manifestation of environmental knowledge and attitudes into pro-environmental behaviors (Brundiers et al., 2010; Jensen, 2002; Lankenau, 2012).

Brundiers et al. (2010) outlines the real-world approach used by the School of Sustainability at Arizona State University. This program recognizes the role higher education should play in developing students' capacity to generate sustainable solutions within the context of the real world. Undergraduates participate in a four-year program that moves them through a 'functional and progressive' model for building competencies in applying sustainability theory to real situations. Students' progress from teacher-centered theory courses to student-centered capstone projects that require students to identify sustainability issues outside of higher education and engage in joint decision-making and project planning activities with community organizations.

Researchers O'Brien and Sarkis (2014) explored a framework for deep learning in sustainability competencies by analyzing sustainability consulting projects in business-related courses across four New England higher education institutions. The study identified community-based learning as a high-impact educational practice. A study conducted by Jiusto et al. (2013) established that new education methods would need to be developed to address sustainability issues. They also acknowledged the contextualized and place-based Nature of sustainability issues and solutions. To address the importance of community-based learning and increase student capacity to implement sustainability solutions, they developed the shared action learning framework for courses taught at Clark University and Worcester Polytechnic Institute. This framework is based on the core actions of sharing, reflecting, and learning, which are supported

by connecting, planning, acting, observing, and reporting. This framework is specifically designed to engage a diversity of stakeholders, interests, and complexities of the social, political, economic, and ecological systems in which sustainable solutions and the redesign of human systems must occur.

Jiusto et al. (2013) identified the importance of engaging in 'prototyping' within the shared action learning framework. Prototyping is the process of testing program or project concepts on small scales in the contexts in which they will take place before scaling up to more significant initiatives. This process allows for integrating multiple perspectives and shared learning on a manageable scale. This is an important concept when considering what regenerative education design may look like, how it might function, and how it will integrate with the dominant Western culture. The prototyping process is essential to the thinking related to the regenerative design of a post-secondary sustainability education program as piloted in this dissertation project.

Post-secondary sustainability education programs that leverage community and place-based learning to build student capacity to enact cultural shifts toward regeneration exist both within and external to higher education institutions. While higher education programs may be informed by research and current trends in education, it is important to consider that higher education institutions may be trapped within the very paradigms that sustainability education and regenerative education are trying to shift. To align with the idea of prototyping, it may be prudent to first incubate and test these approaches on a smaller scale. Gap year programs can offer a platform for this prototyping to occur, including personal development, cultivation of ecological consciousness, regenerative education frameworks, and the development of models of education that encourage cultural shifts through community partnerships.

Gap Year Programs

Gap year programs offer young adults a bridge between high school and college. These programs provide students with opportunities for personal growth, transformative learning, and critical reflection. They typically emphasize experiential education that can help students clarify their personal and professional paths before entering higher education. The inception of the gap year concept has been traced back to the Grand Tour, which provided upper-class British students from the seventeenth to the nineteenth centuries the opportunity for a pinnacle educational experience that included extensive travel (Heath, 2007; King, 2011; O' shea, 2011). This concept was later reinforced through the international travels of the counterculture of the 1960s and 1970s. Gap year experiences are defined as breaks from formal education and the workforce lasting from 3 to 24 months and characterized by elements such as travel or engagement with meaningful activities (Coetzee & Bester, 2010; Heath, 2007). The benefits of gap year programs include: personal growth, clarifying career and higher education trajectories, increased confidence and maturity, identity formation, increased social status and employability, self-reflection, cultivation of civic and democratic responsibilities, and the development of soft skills (Coetzee & Bester, 2010; Heath, 2007; King, 2011; O' shea, 2011; Rabie & Naidoo, 2016).

Gap year programs have also played a role in personal development, particularly filling the missing role of rites of passage in the dominant Western culture (King, 2011). Students transitioning out of high school are at a critical stage of personal development as they look to experiment with identity and lifestyle choices as they separate from their parents (King, 2011; Parker et al., 2015). As a result, the popularity of gap year programs has significantly increased and shifted from a counterculture experience to a highly sought-after socioeconomic status

symbol (Heath, 2007; O' shea, 2011; Rabie & Naidoo, 2016). Research shows that the majority of gap year participants are middle and upper-middle-class students and that students who attended independent secondary schools comprise the majority of gap year participants (Heath, 2007; King, 2011). Despite the benefits of gap year programs, criticism of these programs has included a lack of participant diversity and the role of these programs in contributing to issues of equity in education and the workforce, the perpetuation of volunteer tourism, and the potential negative impacts on career, education, and transition to adulthood due to the delay in these processes caused by the gap year (Martin, 2010; O' shea, 2011; Parker et al., 2015)

Research on gap year programs supports the personal development claims leveraged by this industry, such as increased confidence, maturity, and independence, as well as improved civic, moral, and intellectual development (King, 2011; O' shea, 2011). While these results are encouraging, some research has shown that gap year programs may fall short in delivering on other touted benefits. For example, Parker et al. (2015) conducted two longitudinal studies to assess growth in career and education goal engagement, increased satisfaction with life and career prospects, and achievement in higher education. The studies' results revealed that gap year programs did not impact career and education goal engagement or satisfaction with life and career prospects. The study also revealed that students who participated in gap year programs were more likely to drop out of higher education and that 20% of gap year students never started courses in higher education despite being accepted to higher education institutions.

Rites of Passage

For thousands of years, cultures across the globe have engaged in facilitating experiences that meld Nature, community, and ceremony to support and celebrate significant transitions for individuals (Bell, 2003; Grof, 1996; Lertzman, 2002; Mahdi et al., 1996; Schouten, 1991). The

term “rites of passage” was first applied by Van Gennep (1960) to indicate facilitated experiences that were significant for personal development and included three stages: separation, transition, and reincorporation. While the rites of passage framework have been used in a wide range of traditional and modern experiences, one of the most prominent applications of this process has typically been the transition from adolescence to adulthood (Bell, 2003; Foster & Little, 1989; Lertzman, 2002; Scheer et al., 2007). The transition from adolescence to adulthood is thought to be critical in supporting individuals as they develop an adult identity and their role in society (Thompson et al., 1998). When adolescents cannot experience formal rites of passage experiences that mentors and elders facilitate, there are dire consequences for individuals and society (Foster & Little, 1989; Plotkin, 2010; Thompson et al., 1998). The implications of adolescents not receiving formalized rites of passage can lead young people to attempt to self-initiate consciously or unconsciously through a wide range of risk behaviors. These behaviors lack the structure necessary to support individuals in clarifying their values and beliefs, understanding their gifts and talents, and accessing culturally viable means for implementing their gifts and talents as productive and mature adults (Foster & Little, 1989; Plotkin, 2010; Thompson et al., 1998)

Plotkin (2010) has identified a connection between the loss of formal rites of passage in the dominant Western culture and the perpetuation of an unsustainable culture. When adolescents cannot engage in nature-based human development that includes formalized rites of passage, the transition to adulthood is incomplete. This void leaves uninitiated adults unclear about their gifts and talents and unable to meaningfully engage in their life work. These uninitiated (adolescent) adults may remain lost and confused regarding their role in the world and become easy targets for a consumer-based culture that perpetually aims to sell happiness and

comfort to members of the population. A society that is comprised of these types of adults, coupled with a loss of Nature connection and an education system that intentionally replicates systems of colonization, domination, and mechanization (Battiste, 1998, Hookimaw-Witt, 1998, Logboat, 1987; Freire, 2000) has led to the current state of the dominant Western culture. The regenerative education program that is the aim of this dissertation attempts to address and weave together these various necessary components to rebuild a regenerative culture.

Summary

This research study is ultimately a design project and is meant to innovate regenerative methodology while contributing to the socio-ecological systems framework and place-based education research. In this research study I incorporated a complexity lens to inform the regenerative design of learning environments that facilitate ecological consciousness formation and build student capacity to encourage regenerative cultures across nested socio-ecological systems. This way of being mirrors how ecosystems function and incorporates multiple scales and ecological timeframes (Capra & Luisi, 2016). This dissertation pilots one approach to developing methods for experiencing Nature, self, and community through systems of education that support thriving socio-ecological systems.

In this dissertation I explored the application of regenerative development and design methodology to inform place-based education programs for young adults. This approach to educational design builds on the theories and research related to ecological consciousness, rites of passage for young adults in the dominant Western culture, and the cultivation of sustainable socio-ecological systems. By applying a place-based approach using the regenerative development and design principles this research study looked to offer a clearly defined approach

to the study of socio-ecological systems that encourages these systems towards regenerative states.

Chapter 3: Methodology, Methods, and Research Design

This chapter represents the third pass through the hermeneutic spiral as I developed an understanding of the gap in the research, clarified the research question(s), and formulated a research design. My understanding of the research phenomenon (whole) gained depth and clarity through the review of selected literature presented in chapter two. Chapter three starts with revisiting the research question and sub questions to contextualize the research design and methodology. The chapter then introduces and explores regenerative methodology. Next, an overview of the data collection methods is provided, which maps these strategies to the regenerative development and design principles in Table 1. This section includes descriptions of the research participants and why these specific participant categories were selected to represent various scales of the local socio-ecological system. The chapter then provides a detailed explanation of the qualitative hermeneutic data analysis process and the formation of a final organizing system that allowed for the emergence of multiscale themes that correspond to regenerative development and design principles. Lastly, a summary reviewing the overall research design is offered.

Figure 5

Depiction of the Hermeneutic Spiral Structure of the Dissertation Chapter 3

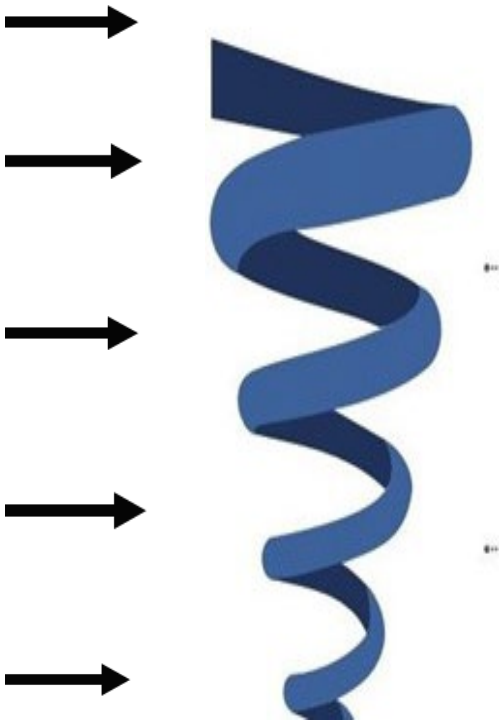
Pass # 1: Chapter 1 - Understanding of the research phenomenon (whole) through theoretical foundations of Sustainability Education course work (parts).

Pass # 2: Chapter 2 - Understanding of the research phenomenon (whole) through the literature review/articles (parts) and a growing understanding of the gap in the research.

Pass # 3: Chapter 3 - Understanding of the research phenomenon (whole) deepens through the research design and the implementation of the methodology and methods (parts).

Pass # 4: Chapter 4 - Understanding of the research phenomenon (whole) through a hermeneutic analysis and interpretation of the research data/text (parts) and the emergence of themes.

Pass # 5: Chapter 5 - Understanding of the research phenomenon (whole) through a hermeneutic interpretation of the research data/text (parts), the integration of the research into existing literature and the recommendations as applied through the 9 Regenerative Development and Design Principles.



Research Purpose

This research study aimed to explore an approach to regenerative education design tailored to a specific context. This study provided an understanding of multiple aspects of the socio-ecological system in the Durango, Colorado, area and culminated with recommendations for designing a regenerative education program. For this study, the regenerative education design focused on an education program for young adults that facilitates personal development, Nature connection, community connection, and regional regeneration.

Research Question(s)

The following are the research questions that framed this work. They are meant to reflect the regenerative development and design approach to understanding place. They were purposely aligned with data collection methods that provided insights into the local socio-ecological system.

Primary Research Question

The primary research question for this study was, *in what ways do regenerative development and design principles uncover needs and opportunities surfaced by Durango, Colorado's cultural and ecological systems to inform the design of a regenerative education program for young adults?* This research question provided the foundation for the dissertation and acted as the basis of inquiry for the study. The intention was to explore how regenerative development and design principles can inform educational program design and how to apply this approach within the framework of a dissertation. The following sub-research questions grew out of this primary question.

Sub questions

a. *What role do young adult education programs play in participant relationships with self, Nature, and culture?*
b. *What role do local bioregional patterns play in designing and implementing a regenerative education program for young adults?*
c. *What needs and opportunities do key informants in the Durango, Colorado area describe within the local ecological and cultural systems to inform the design of a regenerative education program for young adults?*

d. *How might a regenerative education program for young adults support their capacity for personal, ecological, and cultural regeneration?*

Regenerative Methodology

The regenerative methodology was developed by Mang and Reed (2012a), which identifies the formation of an ecocentric worldview as necessary for large-scale shifts towards sustainability aims to develop social systems that contribute to, rather than degrade, the ecological systems that support all life on Earth (Mang & Reed, 2012b). This methodology is informed by a unique set of underlying theories, research frameworks, and methods (Mang & Reed, 2012a). Regenerative development and design projects utilize a process that helps designers better understand a specific place's cultural and ecological aspects, which then influences the project as well as the actions of the various stakeholders (Mang & Reed, 2012a). Due to the complexity of understanding the cultural aspect of place, and a focus on shifting worldviews, the regenerative methodology is housed within the qualitative research tradition. According to Bloomberg and Volpe (2018), "qualitative research is suited to promoting a deep understanding of a social setting or activity as viewed from the perspective of the research participants. This approach emphasizes exploration, discovery, and description" (p. 38). This process of understanding place typically includes defining place, an integral assessment of the place, discerning the core patterns and story of place, and stakeholder dialogue to create guidelines and opportunities for the implementation of regenerative roles.

I chose to utilize a regenerative methodology for this project for multiple reasons. Regenerative development and design embrace a concept called "three lines of work." These include the first line work, which is the development/regeneration of the self; second line work, which is the growing of the capability of a community, and third line work, which is improving

the health and value of a larger system. One of my desired outcomes of this research project is the ability to establish a platform for engaging in and living my inner gifts. In this instance, the first line work is developing my capacity to facilitate this project (self). The second line work in this project is growing the capability of the Durango community to engage in the formation and support of a regenerative education program (community). The third line work is the creation of the regenerative education program itself, which is inherently meant to be informed by and merge with the local bioregion (Nature). Again, the reintegration of the self with the local community and Nature.

The regenerative methodology is actualized through a set of nine design principles (Figure 6). These design principles capture the essence of the regenerative methodology which can be applied to a wide range of project types. By basing this methodology on guiding principles this approach is inherently sustainable as regenerative projects are able to consider and adapt to the context in which the project is being co-created. The guiding principles also allow projects to co-evolve over time with place, continuously contributing to the health of these systems.

Data Collection Methods

The following research methods were selected based on their ability to align with one or more of the nine regenerative development and design principles (Figure 6 & Table 1). These methods included focus groups, interviews, and field observations. These methods were meant to elicit a combination of data from existing post-secondary sustainability education programs and data from the socio-ecological system found in the Durango, Colorado area. The data collected from existing programs acted as best practices in post-secondary sustainability education program design. The data collected from the Durango socio-ecological system informed the

contextualization of the design to best align with this specific place. The data collection methods also enabled the place-field in the Durango area to be in relation to the researcher and express its potential and curricular contributions (Chalquist, 2020). The data collection methods were sequenced to allow for an emergent research design and outcome. Emergence is a critical component of regenerative design and complex adaptive systems (Mang & Reed, 2012a). This research study aimed to mimic the thinking and processes that underlie a regenerative education.

Figure 6 offers an outline of the regenerative development and design principles. This is followed by Table 1 which maps the research questions to data collection methods and specific regenerative development and design principles. The research questions and the data collection methods were mapped to the regenerative development and design principles to allow the data analysis to inform the application of regenerative development and design principles to the Durango, Colorado, socio-ecological system.

Data collection methods targeted specific scales within the local socio-ecological system based on their ability to address the research question and sub-questions. The sub research question, w*hat role do young adult education programs play in integrating participant relationships with self, Nature, and culture?* was meant to provide insights regarding the design of sustainability education programs for young adults. To address this, I conducted semi-structured interviews with program designers external to the Durango socio-ecological system so I could gain insight into the designs of similar types of programs.

The sub research question, *what role do local bioregional patterns play in designing and implementing a regenerative education program for young adults?* was meant to provide insights into the regional ecological patterns and how these patterns can inform the design of a post-secondary education program. A significant aspect of the regenerative methodology is to develop

a deep understanding of both the ecological and cultural aspects of place. To gather data related to this sub question I conducted participant observations throughout the local watershed.

The sub research question, *what needs, and opportunities do key informants in the Durango, Colorado area describe within the local ecological and cultural systems to inform the design of a regenerative education program for young adults?* was meant to provide insights into the cultural aspect of Durango and uncover potential community partners to support the development of the education program. To gather this data, I decided to conduct focus groups with key informants from Durango who represented various organizations and government entities engaged in sustainability, land conservation, environmental education, social justice issues, and Indigenous tribal members.

The sub research question, *how might a regenerative education program for young adults support their capacity for personal, ecological and cultural regeneration?* was meant to capture the perspective of potential future program participants. I did not want to assume I knew what was best for the program participants and I wanted to know what was relevant to them when considering personal growth, Nature connection and community connection. The intention was to gain insights into the perspective of young adults to inform the design of the education program and to distill opportunities and possibilities for young adults to contribute to regional regeneration. To collect this data, I conducted semi-structured interviews with young adults.

Figure 6

Image Showing the Nine Regenerative Development and Design Principles (Mang & Haggard, 2016)

Regenerative Development and Design Principles
(Mang & Haggard, 2016)

1. **Design for evolution**
   - Premise: Every living system has inherent within it the possibility to move to new levels of order, differentiation, and organization.

2. **Partner with place**
   - Premise: Co-evolution among humans and natural systems can only be undertaken in specific places, using approaches that are precisely fitted to them.

3. **Call forth a collective vocation**
   - Premise: The sustainability of a living system is tied directly to its beneficial integration into a larger system.

4. **Actualize stakeholder systems toward co-evolving mutualism**
   - Premise: Projects should be vehicles for catalyzing the cooperative enterprises required to enable evolution.

5. **Work from potential, not problems**
   - Premise: Potential comes from evolving the value-generative capacity of a system to make unique contributions to the evolution of larger systems.

6. **Find your distinctive, value-adding roles**
   - The continuing health of living systems depends on each member living out its distinctive role.

7. **Leverage systemic regeneration by making nodal interventions**
   - Premise: Small conscious and conscientious interventions in the right place can create beneficial, system-wide effects

8. **Design the design process to be developmental**
   - Premise: A project can only create systemic benefit within a field of caring, co-creating, and co-responsibility

9. **Become a systems actualizer**
   - Premise: The actualization of a self requires the simultaneous development of the systems of which it is a part.

Table 1

Table Showing the Relationships Between the Research Question(s), the Data Collection Methods, and the Regenerative Development and Design Principles

Data Collection Methods Mapped to Regenerative Development and Design Principles	
Primary Research Question: *How do regenerative development and design principles uncover needs and opportunities surfaced by Durango, Colorado's cultural and ecological systems to inform the design of a regenerative education program for young adults?* Principles: 1, 2, 3, 4, 5, 6, 7, 8, & 9 • Look at the patterns in the data that have emerged regarding the socio-ecological system and opportunities in the greater Durango area. • Incorporate this data/patterns/increased understanding of the Durango socio-ecological system to inform the regenerative development and design of a regenerative education program.	
Data Collection Method	**Regenerative Design Principles**
Program Designer Interviews **Sub Research Question:** *What role do young adult education programs play in integrating participant relationships with self, Nature, and culture?*	Principles: 1, 2, 3, 4, 5, 6, 7, 8, & 9 • Deepen understanding of design frameworks, elements, and strategies of existing post-secondary sustainability education programs.
Bioregional Observations **Sub Research Question:** *What role do local bioregional patterns play in designing and implementing a regenerative education program for young adults?*	Principles: 2, 3, 4, 5, & 6 • What bioregional patterns exist? • How can these patterns inform the design of a post-secondary education program? • What sort of experiences do I want the students to have? Where would we go? What would we do there, and why?
Key Informants Focus Group(s) **Sub Research Question:** *What needs and opportunities do key informants in the Durango, Colorado area describe within the local ecological and cultural systems to inform the design of a regenerative education program for young adults?*	Principles: 2, 3, 4, 5, & 6 • Discover potential community partners to support the development of the education program design.

	• Discover potential opportunities for community-based projects.
Young Adult Interviews **Sub Research Question;** *How might a regenerative education program for young adults support their capacity for personal, ecological and cultural regeneration?*	Principles: 2, 5, 7, & 9 • Gain insight into the perspective of young adults to inform the design of the education program. • Distill opportunities and possibilities for young adults to contribute to regional regeneration.

Program Designer Interviews

This research design included semi-structured interviews with founders of post-secondary sustainability education programs. These programs were defined as programs that served young adults and contained elements such as ecological design, permaculture, personal transformation, regenerative design, nature connection, or cultivation of ecological consciousness. The inclusion criteria for these research participants are detailed in Appendix C. The program designer semi-structured interviews included research participants representing non-profit organizations, for profit organizations and programs associated with higher education institutions. Program designers represented a wide range of ages and backgrounds. They were all people who were dedicated to creating educational opportunities for young adults with the hope that these programs would address ecological and social justice issues in the dominant Western culture.

Four program designers took part in the research study. Tony Brown, the founder of the Ecosa Institute which is a regenerative design program for adults that teaches systems thinking skills Ecosa engages students in the application of regenerative design through projects with real clients that consider the impacts on both human and natural systems. Lauren Hage, the Executive Director and co-founder of the Weaving Earth Center for Relational Education and the 10-month

Immersion program for adults. The Weaving Earth program aims to embed participants in Nature, interrupt unjust social systems, and take action to care for both people and the planet. Alison Server, the Associate Director of the Rising Earth Immersion program for 18–28-year old's. The Rising Earth program curriculum is centered around the tenets of inner connection, people connection, and earth connection. The final program designer participant was Meredith Little, co-founder of the School of Lost Borders. The School of Lost Borders facilitates initiation and rites of passage programs for adults that focuses on initiating participants to themselves, their communities, and the earth.

These interviews were meant to address the sub-research question, *what role do emerging adult education programs play in integrating participant relationships with self, Nature, and culture?* Interviews are used in qualitative research to record information related to a person's perspective and elicit responses related to attitudes, perceptions, and emotions (Bloomberg & Volpe, 2018). Interviews are typically unstructured, semi-structured, or structured. I chose to use semi-structured interviews when speaking with program founders to provide enough structure to target information related to the research phenomenon while still allowing for emergence in the interview. According to Kallio et al. (2016), semi-structured interviews are flexible, versatile, and allow for reciprocal relationships between the interviewer and the interviewee. Semi-structured interviews allowed me to conduct research with participants rather than on participants and are in line with my research onto-epistemological stance, research lens, and methodology.

Semi-structured interviews typically contain several steps including establishing ethical guidelines, developing an interview protocol, conducting, and recording the interview, and reporting the findings (Rabionet, 2011). The interview process for this research study consisted of identifying program designers using an internet search. Once the program designers were

identified based on the inclusion criteria, they were sent an email to solicit their participation in the research study (Appendix D). The email to each participant explained the research study and contained an attached background information document regarding the researcher and the scope of the study (Appendix A). Next, the interview process consisted of a second email to the research participant containing an informed consent document, the research study interview questions, and suggested interview dates and times (Appendix E, F, & G). Interviews consisted of sixty to ninety-minute recorded video conference calls. Finally, the interview process included transcribing the recorded audio, coding, organizing, and analyzing the interview data (Appendix BB, CC, DD & EE). The data from the interviews were then synthesized using a hermeneutic approach into a final organizing system detailed in Figure 11.

Bioregional Observations

This research design also included bioregional observations. I collected data throughout the Animas River Watershed based on the regenerative methodology process for understanding the core patterns and story of place (Mang & Reed, 2012a). To collect ecological field observations of this watershed, I followed a protocol described in Appendix I. This process included walking around a selected general area within the watershed until I was called to a particular spot. I then sat down and engaged in a mindfulness practice to center myself for about ten minutes. I then spent about thirty minutes quietly observing the flora and fauna, landscape features, patterns, feelings, thoughts and emotions and recorded them in a field journal. I observed high, medium, and low elevations across three seasons, winter, fall, and spring. I conducted one observation at each of the three elevations in each of the three seasons for a total of nine field observations (Appendix Y, ZZ & AA). This process allowed me to collect a diverse set of field observations that offered a more holistic understanding of the watershed. The data

from these observations were transcribed, coded, organized, analyzed, and then synthesized using a hermeneutic approach into a final organizing system detailed in Figure 11.

This data collection process was also influenced by terrapsychology, which is used as an approach for understanding the relationship between people and Nature specific to a location (Chalquist, 2007). Terrapsychology has roots in ecology, psychology, ecopsychology, and environmental science (Chalquist, 2007). Terrapsychological inquiry aims to help the researcher distill the essence of place and come to know it intimately (Chalquist, 2007). Peterson (2019) describes terrapsychology as an exploration of "the ecopsychological relationship between self and environmental surroundings" (p. 8). Terrapsychology suggests that through various data collection methods such as sensory observations of place, interviews, historical records, bioregional and geographical maps, states of consciousness, conversations, and moods, the researcher can analyze the data collected using inductive theming, which will distill the identity of place. As the researcher begins to distill the essence of place or what Roszak (2001) referred to as the voice of the Earth, the researcher can begin to relate to, participate with, and engage place as a collection of co-researchers (Chalquist, 2020).

Bioregional field observation data addressed the sub question, *what role do local bioregional patterns play in designing and implementing a regenerative education program for young adults?* The data collected using bioregional observations helped elucidate a deeper picture of the Animas River Watershed that surrounds Durango as a rich tapestry of interconnected systems to be in a relationship with, not an object to be acted upon. The Animas Valley Watershed spans a cross-section of two major bioregions, the Colorado Plateaus, and the Southern Rockies, with the headwaters north of Silverton, Colorado, in the San Juan Mountains at elevations of around 12,000 feet. The city of Durango, Colorado, is located on the Animas

River and sits around 6,500 feet and displays combinations of flora and fauna found in both bioregions. The downriver end of the Animas River Watershed is at the confluence of the Animas River and the San Juan River in Farmington, New Mexico, which is at an elevation of 5,394 and is characterized by high desert geology, flora, and fauna. This watershed has been highly impacted culturally through the forceful removal of the original caretakers, the Southern Ute tribe, and ecologically through a long history of hard rock mining and oil and natural gas extraction.

Key Informant Focus Groups

This research design also included key informant focus groups to address the sub-research question, *what needs and opportunities do key informants in the Durango, Colorado area describe within the local ecological and cultural systems to inform the design of a regenerative education program for young adults?* Key informant interviews have been widely used within social science research as a method of sampling when gathering data from all population members is not practical (Marshall, 1996a). According to Marshall (1996a), "key informants, as a result of their personal skills, or position within a society, are able to provide more information and a deeper insight into what is going on around them" (p. 92). This sampling process is typically applied to qualitative research studies and intentionally avoids random sampling techniques typically deployed in quantitative research, where generalizability is the aim rather than the ability to describe and understand complex human behavior (Marshall, 1996b). These participants are typically selected because they have intimate knowledge of a particular issue that is relevant to the research.

I chose focus groups for the purpose of this study rather than interviews when collecting data from key informants. The focus group method was desirable as one of the research

outcomes was to begin regenerating the socio-ecological system through the nodal intervention of designing and developing a regenerative education program that integrated with and leveraged existing shared cultural resources. By conducting focus groups, I could bring these key informants together to engage in a rich discussion around the idea of introducing a regenerative education program in Durango while identifying some of the needs and opportunities for engaging with such a program. According to Taylor and Blake (2015), "focus groups are defined as group discussions in which persons from a targeted population discuss and share their perspective on a specific topic or issue of interest, conducted by a facilitator. It is the responsibility of the facilitator to develop a rapport with participants and guide the discussion" (p. 154). The focus group format set the stage for these key informants to collectively brainstorm and build off of one another's ideas, organizational resources and provide a comprehensive, while not fully representative, perspective of the current state of the local socio-ecological system.

Focus groups are a type of group interview which involve the researcher actively facilitating the discussion to collect specific data produced from the discussion (Morgan, 1996). The focus group protocol for this study is included in Appendix J. The focus group process for this research study consisted of identifying key informants in Durango, Colorado, through an internet search based on a set of inclusion criteria described in Appendix K. Once the key informants were identified, they were sent an email to solicit their participation in the research study (Appendix L). The email to each participant explained the research study and contained an attached background information document regarding the researcher and the scope of the study (Appendix A). Next, the focus group data collection consisted of a second email to

the research participant containing an informed consent document, the research study interview questions, and suggested interview dates and times (Appendix M, N & 0).

Key informant participants represented various for profit, nonprofit and government organizations in La Plata County, where Durango is located. These organizations are engaged in land conservation, environmental education, social justice issues, BIPOC activism, community services, the local Indigenous tribal community, or other sustainability education related fields. Key informant focus group 1 included: Imogen Ainsworth the City of Durango Sustainability Director, Marty Pool, the Assistant Director of the Fort Lewis College Environmental Center, Katrina Blair, the founder of Turtle Lake Refuge Farm and Cafe, Brent Schoradt, Executive Director of the San Juan Mountain Association, and Tom chose to remain anonymous. Key informant focus group 2 consisted of: Dr. Rebecca Clausen, Professor of Sociology & Human Services at Fort Lewis College, Werner Heiber, Sustainability Alliance of Southwest Colorado board member, and Brooke Gwendolyn Safford, the founder of Blooming Landscape and Design.

The focus groups were conducted via recorded video conference call due to inability to gather in person because of the COVID -19 pandemic. The focus group process consisted of a sixty to ninety-minute semi-structured session guided by a set of questions. The focus group data were then transcribed, coded, organized, and analyzed (Appendix FF & GG). The data from the focus groups were then synthesized using a hermeneutic approach into a final organizing system detailed in Figure 11.

Young Adult Interviews

It was important to have the voice of the young adults represented in this study to cultivate an approach to educational design that is co-creative and moves away from systems of

domination. By including the voices of the young adults, I was attempting to reduce assumptions about the type of educational programs and experiences that would serve them best. The young adult interviews were designed to answer the research question, *how might a regenerative education program for young adults support their capacity for personal, ecological, and cultural regeneration?*

For this study, I chose to conduct semi-structured interviews with young adults living in Durango, Colorado. The young adult interview protocols and inclusion criteria are outlined in Appendix Q and R. I identified participants through various means, including a flyer posted in town (Appendix V), solicitation at the local college, and word of mouth. I provided documents explaining the research study background, an informed consent document, and the research study interview questions (Appendix A, T & W). Next, the interview process consisted of sixty to ninety-minute interviews conducted either in person and recorded using an audio recording app or via recorded video conference call. In person interviews were limited due to the COVID -19 pandemic.

The young adult participants in this study were all students at Fort Lewis College. These young adults were varied in gender, race, and year in college. The data collected from this method included four young adult participants. The interview process included transcribing the recorded audio, coding, organizing, and analyzing the interview data. The data from the interviews were then synthesized using a hermeneutic approach into a final organizing system detailed in Figure 11.

Data Analysis

The data analysis approach for this study maintained continuity with the hermeneutic spiral framework deployed throughout the study. Hermeneutic data collection and analysis

techniques heavily drew from the work of Patterson and Williams (2002). This hermeneutic approach to data analysis centers around a continuous evolution of understanding the relationship between the researcher, data, and the research phenomenon. This process is represented by an organizing system which is used to help the researcher organize, interpret, and present data (Tesch, 1990). The formation of the organizing system serves as the analysis of the data and the final organizing system serves as the presentation of the data (Patterson & Williams, 2002). The final organizing system acts as a snapshot and communicates the researcher's understanding of the data at that point in time (Figure 11). Given the nature of hermeneutic analysis, if the researcher were to revisit the data at another point in time, their interpretation of the data may be different due to the changes that had occurred in the researcher.

The hermeneutic approach to data analysis is in line with the informing theories for this research study. Hermeneutics attempts to apply a complexity lens to data analysis that captures a holistic and rich description of the inter-relationships between the data presented through the organizing system rather than a reductionist and linear method of understanding the research phenomenon (Patterson & Williams, 2002). The hermeneutic approach to data collection also highlights the relationship between the researcher and the data and does not attempt to present data analysis as an objective and absolute truth based on what I perceive as a reductionistic scientific processes.

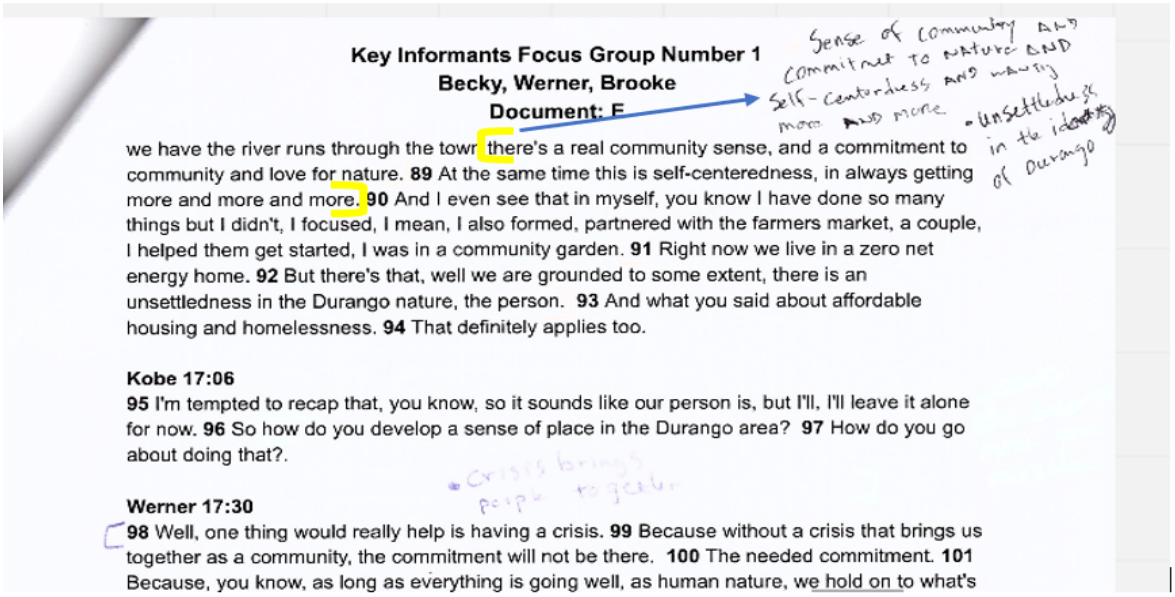
Data analysis for this research study consisted of conducting bioregional field observations, which were captured in a field journal, and video and audio recordings of interviews and focus groups. These data were transcribed and sent back to the research participants for verification. Once the research participants verified the transcripts, the transcripts were then coded for meaning units relevant to the research phenomenon (Patterson & Williams,

2002). Meaning units are discernable pieces of the transcripts that relate to the research phenomenon. While the context of the surrounding text is important, these meaning units can be understood and interpreted as isolated data (Patterson & Williams, 2002). It is important to note that meaning units are not themes and are not identified as such at this stage of the analysis.

The hermeneutic data analysis approach used in this study highlights the importance of the researcher identifying relevant meaning units based on codes related to the research phenomenon and making interpretive notes from their understanding of the research phenomenon (Patterson & Williams, 2002). For this research study, meaning units were identified in the transcripts based on the research questions relevant to each participant category. Codes were applied to identify meaning units specific to that participant category. The following codes were applied to the program designer interviews: program design, community connection, Nature connection, and changes in participants. The following codes were applied to the key informant focus groups: program design, community connection, and Nature connection. The following codes were applied to the young adult interviews: program design, Nature connection, community connection, and personal development. The following codes were applied to the bioregional observations: program design. Figure 7 shows the interpretive meaning unit coding process for a key informant focus group transcript. The meaning unit for this code is bracketed in yellow and the arrow points to the interpretation of the meaning unit, which I am referring to as the interpretive meaning unit. The code being applied in this example is, community connection. This same process was applied to all data transcripts.

Figure 7

Image Showing the Interpretive Meaning Unit Coding Process for One Key Informant Focus Group

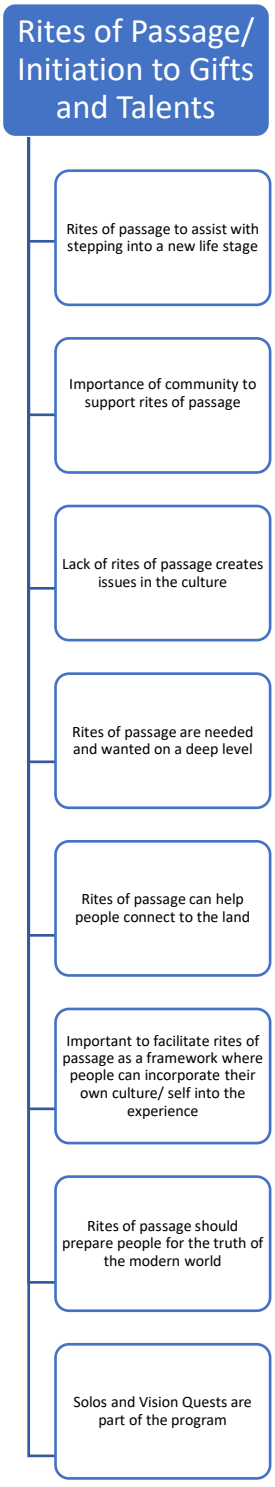


I identified 135 interpretive meaning units from the program designer interviews, 105 interpretive meaning units from the key informant focus groups, 168 interpretive meaning units from the bioregional observations, and 77 interpretive meaning units from the young adult interviews. This totaled 485 interpretive meaning units which required further distillation toward a final organizing system and relevant themes. The next step in the data analysis process was to identify commonalities among the interpretive meaning units within each participant category. As I grouped the interpretive meaning units by what they had in common, I assigned each group a heading at the top. I refer to each group of interpretive meaning units as a strand. The headings I assigned to grouped interpretive meaning units are not to be confused with themes, rather at this point in the data analysis I was establishing the first phase of the organizing system that

would allow for the identification of interrelationships in the data. Figure 8 provides an example of one set of grouped interpretive meaning units from the program designer interview transcripts and a heading indicating what those interpretive meaning units had in common.

Figure 8

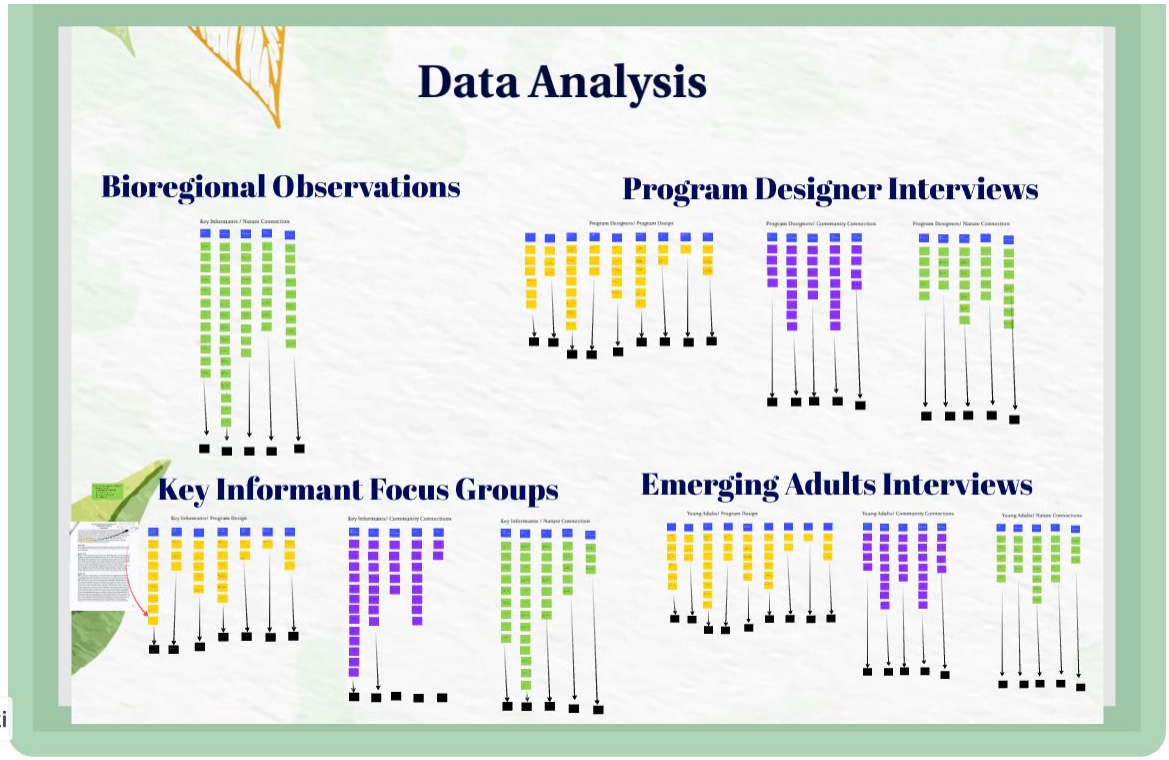
Image Showing One Set of Interpretive Meaning Units From the Program Designer Interviews Grouped Together Based on Association With the Concept of Rites of Passage



Once the interpretive meaning units were organized by participant category and code, into strands with a heading, the first phase of the organizing system was complete. Figure 9 provides an overview of the totality of the interpretive meaning unit strands from all participant categories grouped by codes. The black boxes at the bottom of each strand will be explained in the next section.

Figure 9

Image Showing the Entire Collection of Interpretive Meaning Units by Participant Category and Organized into Groups Based on Commonalities

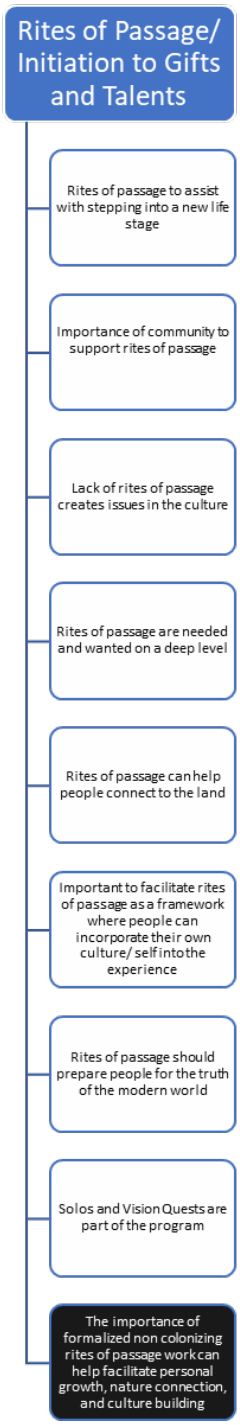


The next phase of the data analysis process was to distill each strand of interpretive meaning units into what I refer to as macro interpretive meaning units. The macro interpretive meaning units attempted to capture the essence of the meaning units in each strand. Figure 10 returns the example provide in Figure 8 depicting data from the program designer interviews and

the code, program design. The top blue box represents the heading I gave to this group to indicate the commonalities of these interpretive meaning units with each white box containing an interpretive meaning unit. The black box that has been added to the bottom of the strand indicates the macro meaning unit, or the essence of all the interpretive meaning units in that strand.

Figure 10

Image Showing One Set of Interpretive Meaning Units in White Boxes From the Program Designer Interviews Grouped Together Based on Commonality With the Concept of Rites of Passage in the Blue Box and a Macro Meaning Unit at the Bottom in a Black Box



Once I distilled the interpretive meaning units from all four participant categories into macro meaning units, I had identified 49 macro meaning units. I was then faced with the task of arranging the 49 macro meaning units into a final organizing system that would allow me to distill the data into a few themes. I wanted to highlight the interrelationships between the participant categories, which were intentionally representative of different scales of the socio-ecological system in Durango (minus the program designer interview data, which was external to this system). I also wanted to relate the data to the nine regenerative development and design principles, which would allow me to interpret and present the data through the lens of a regenerative project designer. These outcomes for data analysis were accomplished through the construction of a final organizing system (Figure 11).

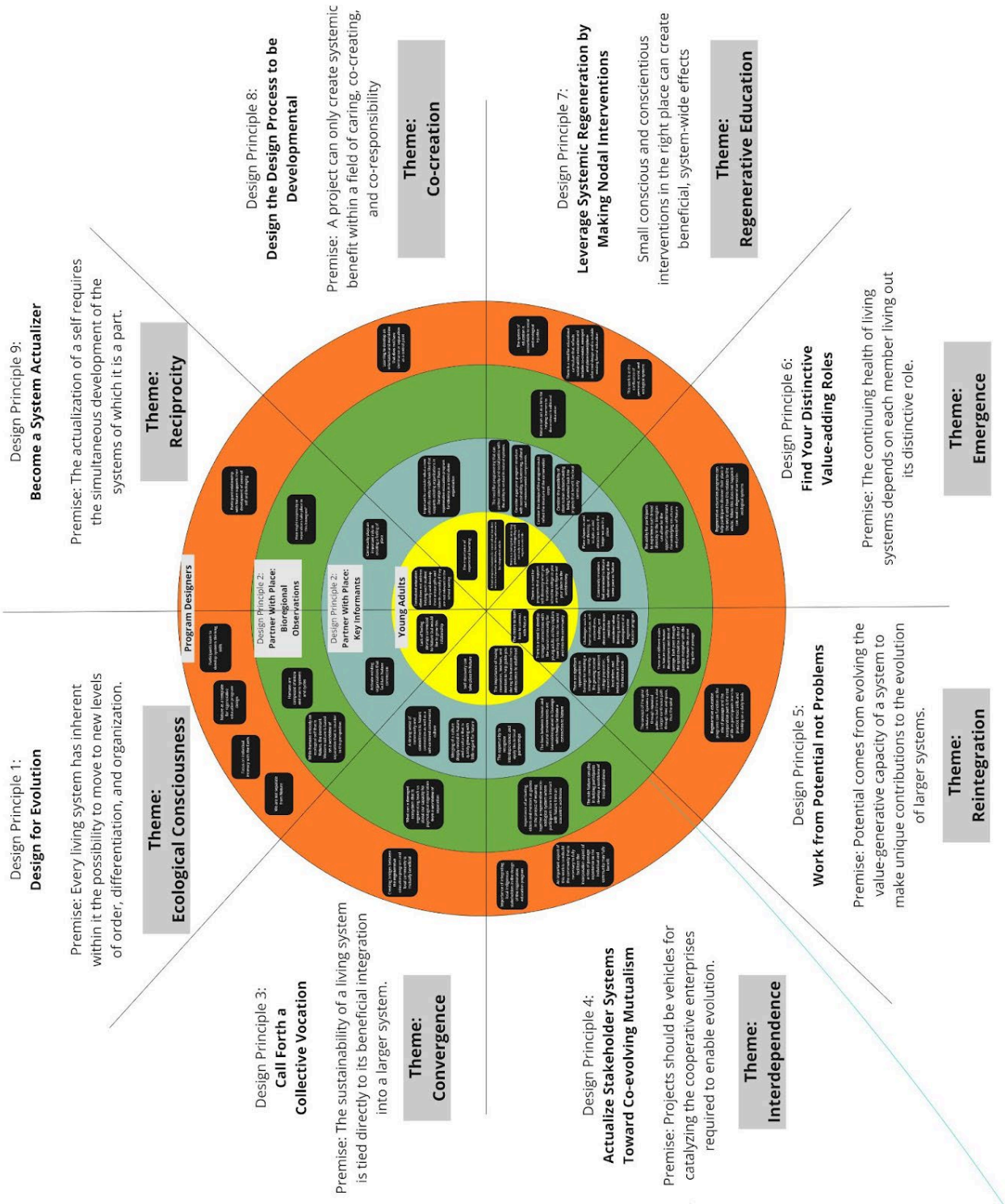
To construct the final organizing system, I arranged eight of the nine regenerative development and design principles in a wheel pattern, with each design principle associated with one spoke of the wheel. I then placed four nested circles in the center of the wheel, each representing one of the four participant categories. The outer most circle represented the program designer focus groups as the insights from this data provided the filter through which the regenerative development and design principles were applied to the educational design. The next circle represented the bioregional observations as Nature is the context in which the educational design, key informants, and young adults all exist. The third circle represented the key informant focus groups. The final circle represented the young adult interviews at the center of the organizing system as the program is designed for these participants. I located the remaining regenerative development and design principle, partner with place, in the wheel's interior as part of the key informants' circle (culture) and the bioregional circle (Nature) due to the emphasis on place in this research study and the regenerative methodology.

Once I had established the framework of the final organizing system, I then engaged in multiple rounds of arranging the 49 macro meaning units within the organizing system based on two variables. The first variable was the participant category for each macro meaning unit. The second variable was my interpretation of a relationship between the macro meaning unit and one of the eight regenerative development and design principles surrounding the wheel.

Once I initially placed the 49 macro meaning units in the final organizing system, I reread the entirety of each transcript (whole) with a new understanding based on the first round of identification of macro meaning units and codes (parts). I then considered the context of the overall transcript and the various aspects of data and cross-referenced these with the organizing system and moved macro meaning units around until I felt they were in the correct location based on my knowledge of the research phenomenon and data. Figure 11 shows the final organizing system, complete with the 49 macro meaning units. Chapter four presents each of the slices of the final organizing system (Figure 11) in a horizontal arrangement that clearly depicts the design principle, theme, and associated macro meaning units (black boxes in Figure 11) for each principle to review these elements as they related the findings of the study. Please refer to chapter four for additional information and details regarding Figure 11.

Figure 11

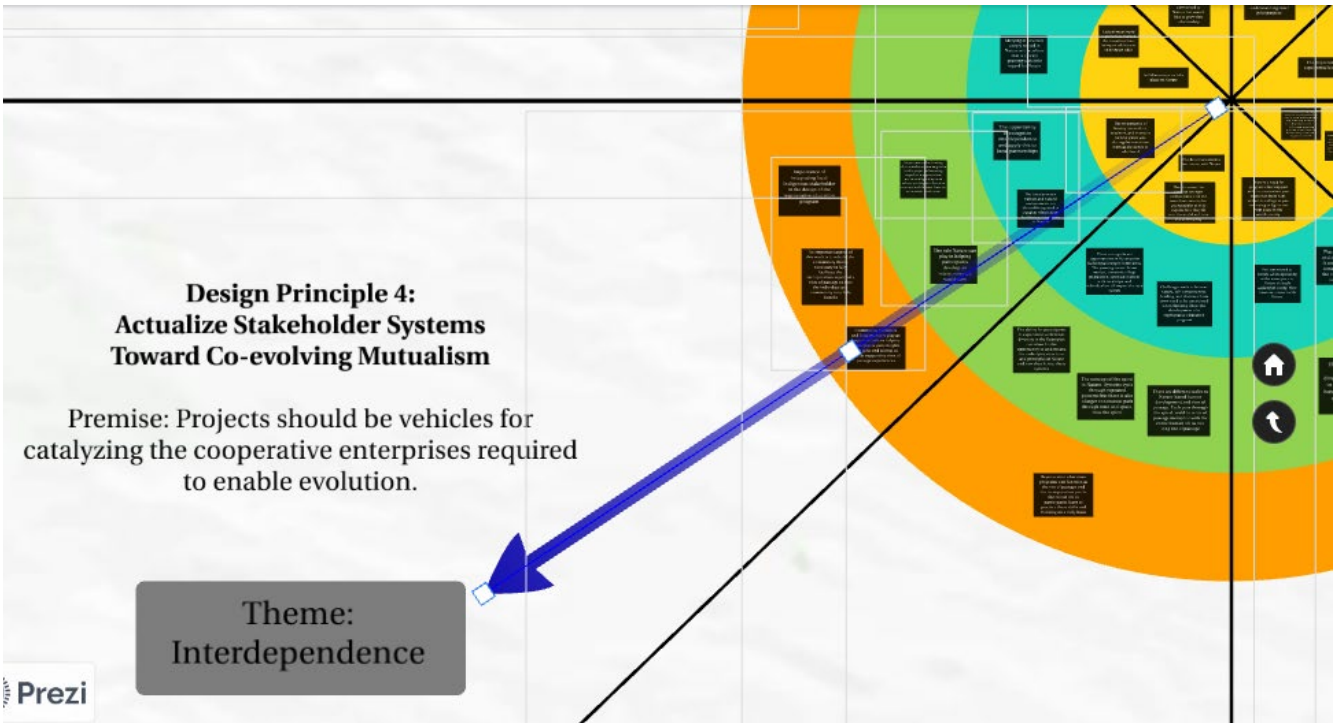
Image Showing the Final Organizing System of the Regenerative Socio-ecological Systems Framework



The next phase of the data analysis was a process of surfacing multiscale themes from the macro meaning units across the participant categories in relation to the regenerative development and design principle for each section of the wheel. Figure 12 shows the section of the final organizing system related to regenerative development and design principle four, *actualize stakeholder systems toward co-evolving mutualism*, and the interrelationships between the macro meaning unit for young adults, key informants, bioregional observations, and program designers that are related to that design principle and the emergence of the theme, interdependence. The eight emergent themes and data to support them are presented in detail in chapter four.

Figure 12

Image Showing the Multiscale Thematizing Process



Limitations of the Study

This research study relied on data collected through interviews, observations, and focus groups. The amount, quality, and relevance of the data for the focus groups varied depending on

the participant selection, willingness to participate, mood, comprehension of and connection to the questions, the presence of the other focus group members and my facilitation of the focus groups discussion. The limitations of the focus group included the need to conduct them via videoconference instead of in person due to COVID-19. Another limitation of the study was only running two focus groups when a much larger representation of key informants would be preferable to gather a more complete picture of the socio-ecological system. Focus groups could also have included a larger diversity of participants.

The limitations of the interviews in this study included various factors such as the willingness of participants to engage in the interviews, their overall mood, comprehension of and connection to the questions, and my facilitation of the interviews. The limitations of the interviews included the need to conduct them via videoconference instead of in person due to COVID-19. Another limitation was the inability to collect a wider range of qualitative data from more participants to better represent the cultural aspect of the socio-ecological system such as a larger cross-section of young adults with greater diversity including racial, gender, gender identity economic and other identifying lenses. In addition, the young adult participants in this study were all recruited on the local college campus, which may have provided a biased perspective about their relationship to self, the community and Nature, as well as their experiences with formal education. Limitations of this study also included the quality of the bioregional observations. The observations took place over the course of three seasons and were highly impacted by my mood, selected observation site, weather, and other factors that impacted my experience in that moment.

Another limitation of the study is the lack of a wider range of qualitative and quantitative data, particularly relating to the ecological component of the socio-ecological system that could

represent such data as soil composition, climate, geology, water, and air quality, flora and fauna index, and mining and other natural resources extraction information. Socio-ecological systems are composed of such a rich diversity of social and ecological variables that it is difficult to collect and analyze data on all of these aspects of the system.

Summary

This chapter detailed the research design, methodology, and methods for this study. It described the regenerative methodology and the application of regenerative development and design to craft a research design utilizing appropriate methods to address the primary and secondary research questions. The chapter outlined the research approach to applying regenerative development and design principles to understand better the needs and opportunities of Durango, Colorado's socio-ecological system. The intended outcome of this research study is to inform the design of a regenerative education program for young adults specific to the Durango, Colorado, area.

There was a total of four program designers, eight key informants, and four young adult participants. There was also a total of nine bioregional field observations across three elevation ranges in three seasons. This study used a qualitative hermeneutic data analysis approach to identify multiscale themes and patterns. The transcripts yielded a total of 485 interpretive meaning units, which were distilled into 49 macro meaning units. The 49 macro meaning units were arranged within a multiscale final organizing system representing the four participant categories and the nine regenerative development and design principles. From this final organizing system, multiscale analysis within each regenerative development and design sector produced eight emergent themes. The next chapter offers the findings of the hermeneutic analysis by presenting the emergent multiscale themes and supporting evidence from the data.

Chapter 4: Findings

This chapter shares the findings generated from applying the regenerative methodology to a research study aimed at uncovering the needs and opportunities in Durango, Colorado's cultural and ecological systems to inform the design of a regenerative education program for young adults. This research explored the educational design and delivery approaches that move away from a worldview of separation to a systems perspective rooted in ecocentrism. If sustainability education aims to encourage the formation of ecocentric worldviews and systems thinking, then the exploration of regenerative educational design may be crucial.

The process of producing a regenerative educational design extends well beyond the scope of this dissertation. The findings offered here reflect the first phase of the design process. This process includes developing an understanding of place and bringing the data connected to regenerative development and design principles to life through further engagement with regenerative development and design. The data presented is intended to be shared with a regenerative design project team in the Durango area, who would carry this work forward. At the time of publication, a board member of a local nonprofit that participated as a co-researcher has shown interest in providing the platform for forming a project design team that would engage in actualizing this work. Additionally, the findings are meant to expand the application of the regenerative methodology within academic research. This chapter represents the fourth pass through the hermeneutic spiral (Figure 13). My understanding of the research phenomenon (whole) continued to deepen as I applied hermeneutic data analysis and synthesis to the data/text (parts). Due to the use of the hermeneutic framework the findings in this chapter are blended with analysis and interpretation.

Figure 13

Depiction of the Hermeneutic Spiral Structure of the Dissertation Chapter 4

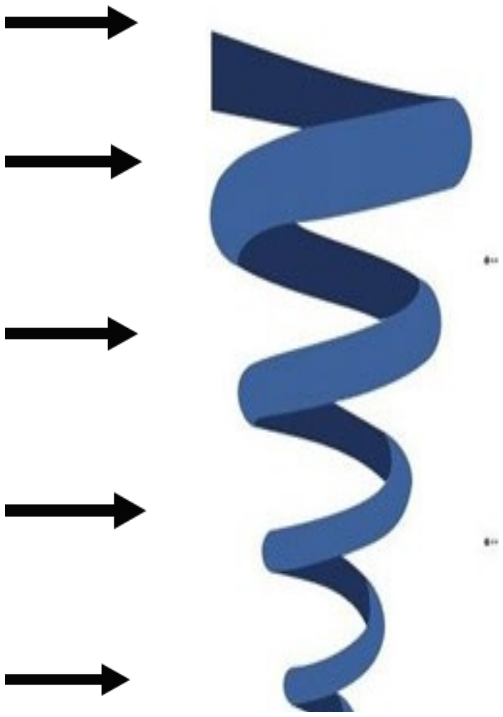
Pass # 1: Chapter 1 - Understanding of the research phenomenon (whole) through theoretical foundations of Sustainability Education course work (parts).

Pass # 2: Chapter 2 - Understanding of the research phenomenon (whole) through the literature review/articles (parts) and a growing understanding of the gap in the research.

Pass # 3: Chapter 3 - Understanding of the research phenomenon (whole) deepens through the research design and the implementation of the methodology and methods (parts).

Pass # 4: Chapter 4 - Understanding of the research phenomenon (whole) through a hermeneutic analysis and interpretation of the research data/text (parts) and the emergence of themes.

Pass # 5: Chapter 5 - Understanding of the research phenomenon (whole) through a hermeneutic interpretation of the research data/text (parts), the integration of the research into existing literature and the recommendations as applied through the 9 Regenerative Development and Design Principles.



Data Collected

The purpose of this research study was to utilize a regenerative development and design approach to inform the design of a regenerative education program specific to Durango, Colorado. This study's interviews, focus groups, and bioregional observations serve as qualitative data to describe the local socio-ecological system. These descriptions highlight needs and opportunities and provide the context for implementing an education program that can contribute to the health and vitality of the local socio-ecological system. Participant categories comprised four program designer interviews, two key informant focus groups totaling eight

participants, four young adult interviews, and nine bioregional observations within the Animas River Watershed. The hermeneutic data analysis revealed 485 interpretive meaning units, which were further synthesized into 49 macro meaning units.

Qualitative hermeneutic data analysis (Patterson & Williams, 2002) is often coalesced into a final organizing system which presents data in a way that highlights the relationships between the data (Figure 14). The organizing system for this dissertation displays eight regenerative development and design principles surrounding a multiscale representation of data collected from program designers, bioregional observations, key informants, and young adults, which I refer to as the Regenerative Socio-ecological Systems Framework. The 49 macro meaning units were placed within the organizing system based on the participant category of each macro meaning unit and its relationship to one of eight regenerative development and design principles. The nineth regenerative development and design principle, *partner with place*, was embedded in the key informant and bioregional aspects of the organizing system as this principle is highlighted as the primary lens for this dissertation study and is inherently entwined with these two participant categories (Figure 14). The data are presented to explore eight emergent multiscale themes, each aligned with one of the regenerative development and design principles. The eight multiscale themes consisted of: ecological consciousness, convergence, interdependence, reintegration, emergence, regenerative education, co-creation, and reciprocity (Figure 14).

Emergent Themes from Multiscale Data Synthesis and Relevance to Regenerative Development and Design Principles

I discuss the following data based on their relationship across scales of the socio-ecological system and their relationship to one of the regenerative development and design

principles. This data analysis was rooted in hermeneutics and the regenerative design and development process of understanding place. The analysis highlights one design principle/section at a time from Figure 14 and then walks through the associated macro meaning units from each of the four participant categories: program developers, key informants, bioregional observations, and young adults. The exception to this process is the location of the regenerative development and design principle of, *partner with place*, which due to its importance to the design project and participant categories was located within the organizing system as depicted in the final organizing system in Figure 14.

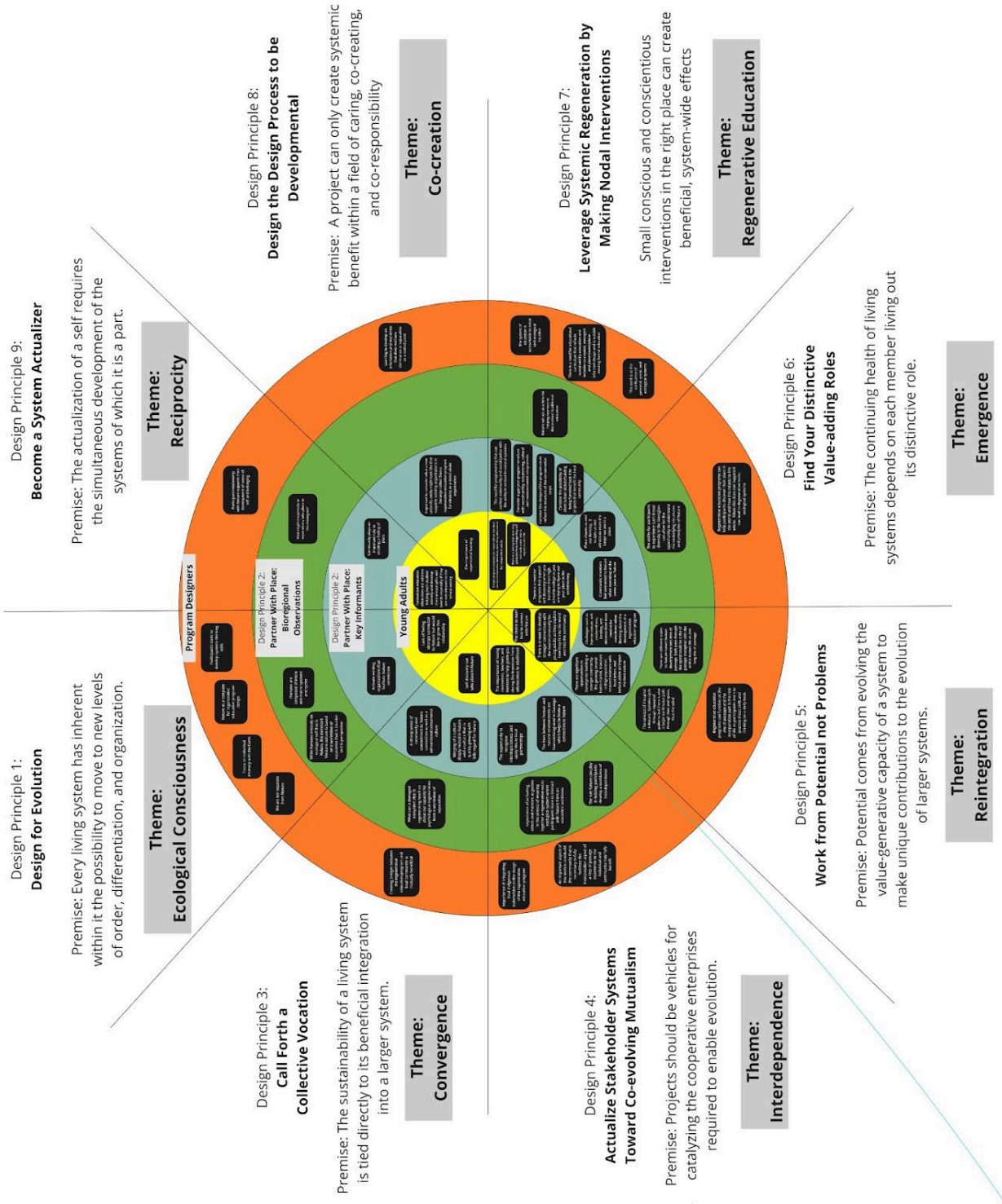
Table 2

Regenerative Socio-ecological Framework Multiscale Themes and Corresponding RDD Principles

Regenerative Development and Design Principle	Theme
1. Design for evolution	Ecological Consciousness
3. Call forth a collective vocation	Convergence
4. Actualize stakeholder systems toward co-evolving mutualism	Interdependence
5. Work from potential, not problems	Reintegration
6. Find your distinctive, value-adding roles	Emergence
7. Find your distinctive, value-adding roles	Regenerative Education
8. Design the design process to be developmental	Co-creation
9. Become a systems actualizer	Reciprocity

Figure 14

Image Showing the Final Organizing System of the Regenerative Socio-ecological Systems Framework

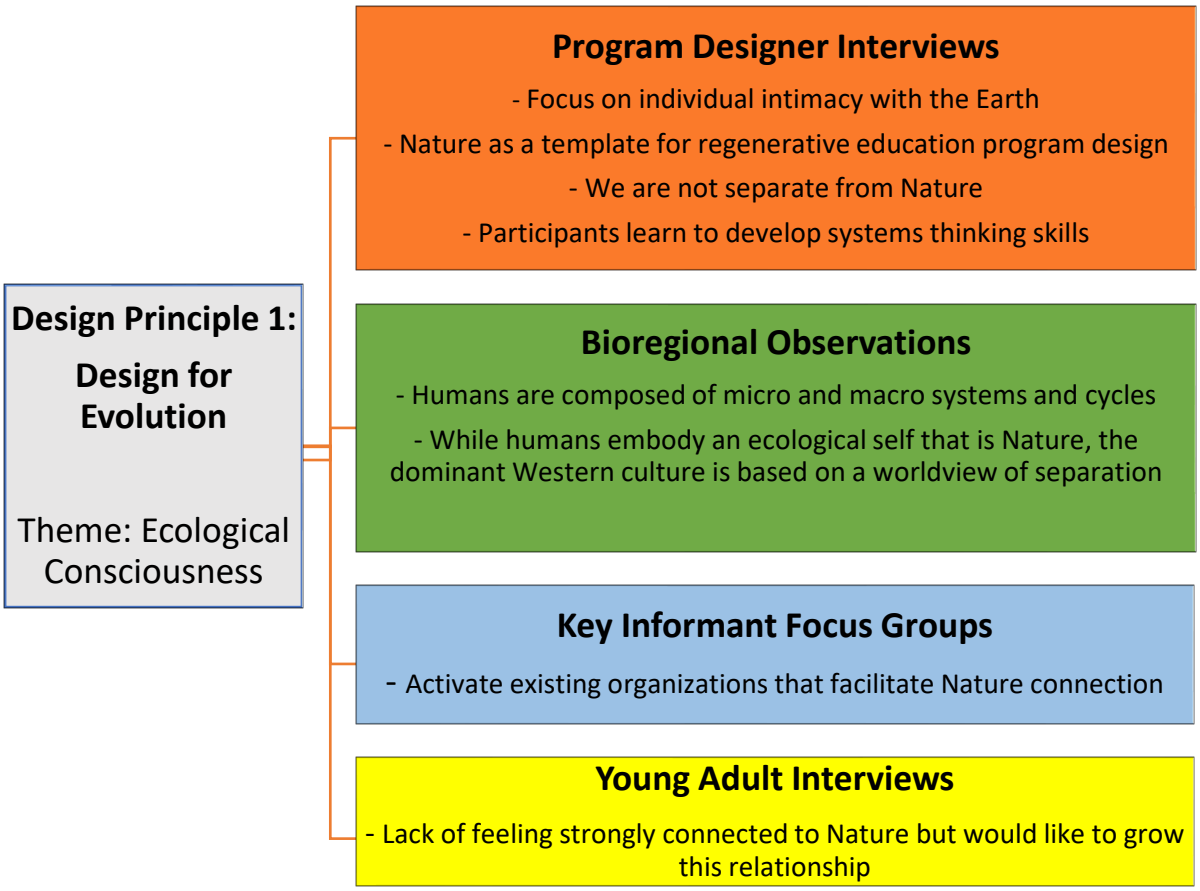


This chapter is arranged to walk you through each of the eight multiscale themes and the macro meaning units in that section of the wheel from Figure 14. Figures 15-22 each represent one section of the wheel in Figure 14. Each section is laid out in a horizontal arrangement with the macro meaning units from the black boxes in Figure 14 displayed as bulleted lists under each participant category (program designers, bioregional observations, key informant focus groups, and young adult interviews).

Theme: Ecological Consciousness
Design Principle 1: Design for Evolution
Premise: Every living system has inherent within it the possibility to move to new levels of order, differentiation, and organization.

Figure 15

Image Showing the Macro Meaning Units by Participant Category and Related to RDD Principle #1 and the Emergent Theme, Ecological Consciousness



The regenerative development and design principle of, *design for evolution* centers on the concepts of change, diversity of relationships between elements in a system, exchanges within and between systems that create value, and nested systems (Mang & Haggard, 2016). The data related to this design principle coalesced around the theme, ecological consciousness. The ability for members of society to engage in regenerative work will rely on their capacity to develop an ecocentric worldview and associated systems thinking skills which will help them design human systems that embody the capacity to evolve with the local ecosystem. The development of ecological consciousness and systems thinking can come from deepening one's relationship with Nature, as Nature is a primary example of evolutionary capacity within systems.

Insights From Program Designers

Focus on Individual Intimacy with the Earth. Insights from program designers that relate to the design principle, *design for evolution* revealed that the ability to better understand principles of evolution and ways to embed these in regenerative education could come from Nature. One of the effects of a worldview of separation is that members of the dominant Western culture have largely come to see themselves as separate from Nature. One of the programmatic outcomes for participants in regenerative education programs is to begin to dissolve this false duality through building intimacy with Nature (as another facet of the self). When asked about how Weaving Earth facilitates the relationship between program participants and Nature, program designer Lauren responded,

> So what I'll say is, what we do is called earth intimacy. That's one of our curricular points, and the reason that we use that language is because we're basically saying we are a part of the earth, humans are a part, part of the earth, and the relationships, the connection is there, and so then what is it to nurture intimacy between those relationships,

> and so that's the way that we hold it, and, I think, intimacy is born of time, attention, and care. (Appendix CC)

This focus on intimacy with Nature can be facilitated through a wide range of regenerative education activities that help participants slow down and become more mindful of the ecological systems around them. These experiences can support participants in expanding their ecological consciousness.

Nature as a Template for Regenerative Education Program Design. Program designers also offered that Nature can provide understanding and act as the basis for regenerative education program design. According to program designer Meredith, Nature is a central focus of her young adult program, "yeah, that's basically the entire context of what we do, is we go out on the land. The land is the source of wisdom. It is the source… it's the context of being human, of being nature" (Appendix EE). As a source of wisdom, it would be prudent to learn to pay close attention to the local bioregion to fully understand and embrace place-informed educational design and practices that can contribute to thriving socio-ecological systems. Regenerative development and design principles can aid in working with local ecological patterns to allow regenerative development and design projects to evolve with their surroundings.

Program designer Tony reinforces the idea that Nature can act as a template for the design of regenerative education programs when he states, "there are events on a continuum, and so there is one difference that I think fits into the idea of regenerative, using nature as a model, to model, what is going to work in an educational setting" (Appendix DD). Spending time in Nature and developing intimacy with the local bioregion can aid regenerative education designers in expanding their ecological consciousness, which can allow them to design the program according to the patterns and structures that are regionally present. This allows the

educational program to work with and not against the ecosystem and helps students and teachers begin to reverberate the essence of place.

We Are Not Separate from Nature. Other program designers also highlighted the importance of a relationship with Nature. They stressed that one of the desired outcomes for their programs is facilitating a shift toward ecological worldviews where students begin to understand that we are not separate from Nature. This shift in perception impacts even the idea that we are connecting with something outside of ourselves when we spend time in Nature. This may be an inaccurate description of this experience or connection when we begin to see Nature as an aspect of the self. Program designer Lauren attempted to clarify this concept when describing the framing of Nature connection in the Weaving Earth program,

> which even, you know, the language is complicated, which is why we say it so many different ways all the time that because like we've even not been using the word nature connection because there's some way that that implies that humans aren't a part of nature and so we really uphold the value that we are nature. (Appendix CC)

Dissolving the binary of individual and Nature is not an easy task in the dominant Western culture. A regenerative education program can draw on concepts from the field of sustainability education, including methods for developing ecological consciousness.

Participants Learn to Develop Systems Thinking Skills. According to program designers, another purpose for these programs is to teach participants complexity and systems thinking skills. Regenerative and sustainability educators have identified that systems thinking may be vital in helping humans understand how to navigate the complexity of sustainability issues. According to program designer Tony, his regenerative design program for young adults supports students in developing systems thinking, “one of the things that the program does is it

teaches how to think differently, not thinking linearly, it's thinking complexly, rather than you know step by step" (Appendix DD).

One aspect of systems thinking is to be able to see how things are interconnected through time and space. Program designer Alison explained,

> The Rising Earth curriculum is intended to shift participants into a way of thinking that considers much more than themselves, and to equip them to bring change in consideration of the more-than-human world, different marginalized populations, and the future descendants of us all, with a life-path that is not only contributive but sustainable and meaningful as well. (Appendix BB)

The ability to shift from seeing ourselves as isolated and independent of the systems around us, such as other people, future generations, plants, and animals, will be necessary to build a regenerative culture. Nature inherently embodies the principle of *design for evolution* and offers a framework for healthy socio-ecological systems and the development of ecological consciousness.

Insights From Bioregional Observations

Humans Are Composed of Micro and Macro Systems and Cycles. My insights from bioregional observations related to the principle of *design for evolution* centered around the concept of nested systems. Observations encouraged the acceptance that individual lives are not a linear existence from birth to an end (death), but that we are deeply embedded and entwined with smaller and larger systems, including oxygen, nitrogen, carbon, water, minerals, and the life cycles of plants and animals. We are also home to a wide range of microscopic organisms that interact with our mouths, skin, and digestive systems. One of my bioregional observations generated the following note,

> The mountains, lakes, and rivers are the source but not the ultimate source, as it is a cycle. Not linear, just as we are deeply connected to and part of the larger cycles. We are, in fact, in one phase of multiple cycles coming together through emergence to create what we experience as human life while still participating in eating, drinking, breathing, and biogeological cycles that flow through us before dissipating through death into new phases and cycles of existence. Why does the human mind and the dominant culture try to lead us to believe otherwise? (Appendix Z)

This fundamental shift in perception can help us understand that we are not separate autonomous entities but rather a semi-stable interface of multiple large and small systems that are interconnected and continuously evolving.

Another one of my bioregional observations reinforced how time spent in Nature can begin to reveal and strengthen ecological consciousness:

> the amazing idea that everything I see, touch, and sense, including myself, are reconfigurations of the same elements. Different forms, stages of the same building blocks, just arranged differently, and these different arrangements (myself, the clouds, the river, the cow poop, the grass, the dead trees) will continuously flow into and out of each other in a seamless underlying structure of oneness/relationship. (Appendix Z)

We are essentially a collection of co-evolving systems that interface for a period of time, and the ability to perceive this can help humans to design and interact with systems they participate with, rather than counter to, this ecological view of reality. The ability to comprehend and experience reality as multi-scale interconnected systems can help us better learn to participate in ways that are tuned to the patterns and underlying structures of Nature which opens the possibility for

shifting away from a worldview of separateness. The development of ecological consciousness can aid in this shift.

While Humans Embody an Ecological Self That is Nature, the Dominant Western Culture is Based on a Worldview of Separation. The ecological self is constantly co-evolving with the local and regional socio-ecological system. According to program designer Meredith, "realizing that one of the most important things that our people need in this culture is to recognize that we are nature, and not to have that false sense of we're separate from nature" (Appendix EE). The development of this interconnected worldview can help us design human systems specific to place and meant to evolve with it as we see ourselves intimately embedding the local ecosystem. The current dominant Western culture ignores place, embraces a worldview of mechanistic separation, and designs systems that undermine the patterns and functions of natural systems. The development of ecological consciousness will be critical to reversing the climate crisis as we relearn to participate with, rather than control, Nature.

Insights From Key Informants

Activate Existing Organizations That Facilitate Nature Connection. Insights from key informants related to the principle of *design for evolution* elucidated that several organizations in the Durango, Colorado area help facilitate connections to Nature both within the city limits and outside the city limits. These existing services create value for the local residencies and ecosystem by creating opportunities to connect with and conserve Nature. Turtle Lake Refuge Director Katrina described how her organization facilitates nature connection,

> I would say that Turtle Lake refuge, our mission is to celebrate the connection between personal health and wild lands, and so really it's a huge focus of everything that we're doing, and part of it is to provide opportunities for people to develop more awareness of

> the wild edible and medicinal plants, and how they can be integrated into the diet or for health, or if it might be to get these opportunities for kids and all ages to get more involved with growing food out of the farm and getting their hands involved in more projects, hands-on projects and growing even microgreens year-round, and other sustainable practices that just acknowledge that the resources that we're utilizing come from our beautiful nature and so making sure that we're as kind as we possibly can and how we go about our human life. (Appendix FF)

Turtle Lake Refuge could act as a significant local partner for regenerative education projects and offer wisdom regarding wild edible plants and organic gardening, as well as program space on their 5-acre farm on the outskirts of Durango.

Brent from the San Juan Mountains Association, which serves the dual purpose of stewarding public lands and providing outdoor education programming for local schools, described the organization's role in the following way,

> San Juan Mountains Association empowers youth and adults, and visitors to explore, learn about, and protect our public lands and the natural environment around us. So everything from youth programs that get kids outdoors to adult stewardship programs where we're empowering local community members to contribute and give back to public lands through stewardship projects. So, pretty much all we do is try to connect people to the outdoors and also educate visitors on how they can responsibly visit when they come here because that's, you know, increasingly a big issue that we're seeing is just growing impacts to public lands from growth in, in visitors. (Appendix FF)

The Nature experiences offered by these local organizations could be expanded and evolved to focus on the growth of ecological consciousness. The design of a regenerative education program

could leverage these existing local organizations to provide opportunities for participants to develop ecological consciousness.

Insights From Young Adults

Lack of Feeling Strongly Connected to Nature but Would Like to Grow This Relationship. Insights from young adults related to the principle *design for evolution* revealed that young adults are interested in growing their connection with Nature which could lead to the evolution of ecological consciousness. Young adult participant Anthony shared,

> I'm not too sure if I could say I am close to it (nature). I mean, I love nature, and we've been on a few or at least one hike. Yeah, we went on a hike as part of a club, but I love hiking, and if I had the chance, I'd try to go out and hike some more, at least explore these other areas in Durango because it is very beautiful. (Appendix II)

Young adults also recognize that spending time in Nature can play an important role in helping them come to know themselves. Anthony goes on to offer,

> I went to an all-boys Catholic school, and so we were allowed to do a lot of stuff that you usually wouldn't be able to do with a co-ed school, and one of them was camping in the wilderness for two days. It really brought us together as a class, and it really allowed me to, you know, talk about and open up about my progress as a student. I wasn't a really good one (student), but I think having that…very relaxed and peaceful environment, was something that really helped me talk about stuff like that. (Appendix II)

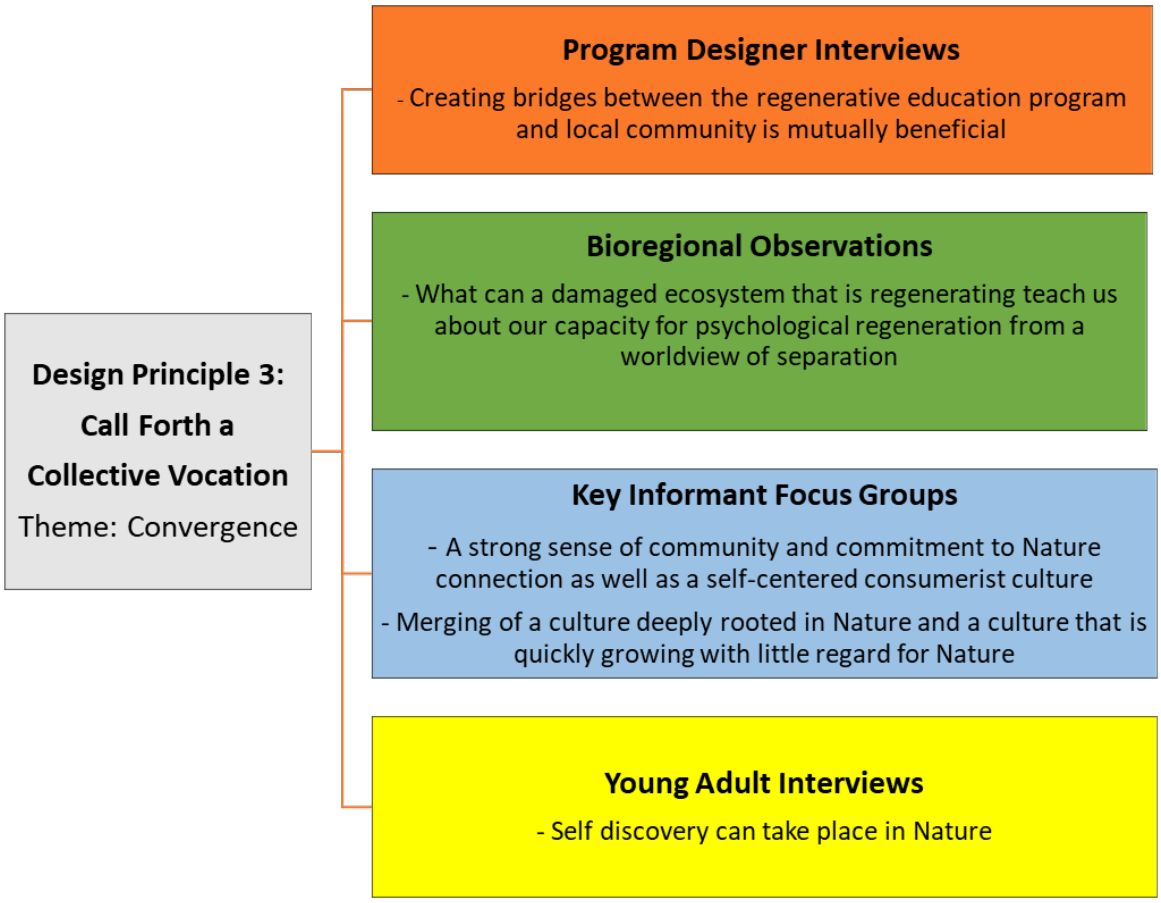
The ability to spend time in Nature and develop a deeper sense of self can allow young adults to embody ecological consciousness more fully. Young adults who operate from an ecocentric worldview can more intentionally co-evolve with the bioregion. The complexity and depth of an ecocentric worldview can continue to expand when a regenerative education program is designed

to evolve through such approaches as teaching participants regenerative development and design skills and connecting them with local organizations and stakeholders to generate various regenerative projects that continuously improve the socio-ecological system.

Theme: Convergence
Design Principle 3: Call Forth a Collective Vocation
Premise: The sustainability of a living system is tied directly to its beneficial integration into a larger system.

Figure 16

Image Showing the Macro Meaning Units by Participant Category and Related to RDD Principle # 2 and the Emergent Theme, Ecological Convergence



The design principle *call forth a collective vocation* refers to the community's identity, and contributes to the uniqueness of a particular place. The creativity that gives rise to the

collective vocation is place sourced and integrates the various aspects into a collective whole (Mang & Haggard, 2016). When a collective vocation is identified, people can engage in regenerative development and design projects in ways that allow them to embrace their talents and gifts while contributing to and participating in a shared purpose. Identifying the collective vocation is important before engaging in a regenerative development and design project. It provides the container for the project and can help align the nested vocations of self, project, community, bioregion, and beyond (Mang & Haggard, 2016). This alignment allows project team members and stakeholders to understand how they can contribute in productive and meaningful ways.

The data relating to the design principle *call forth a collective vocation* uncovered convergence as a central theme. Convergence is the coming together of separate entities to form a single element. Convergence is reflected in the process of coalescing a collective vocation and the coming together of various elements of the local socio-ecological system in ways that are place aligned. The convergence theme also suggests the opportunity for the regenerative education program to integrate with Durango's collective vocation to mutually support regional regeneration.

Insights From Program Designers

Creating Bridges Between the Regenerative Education Program and Local Community is Mutually Beneficial. Insights from program designers related to the design principle *call forth a collective vocation* centered on the perspective that creating bridges between a regenerative education program and the local community is mutually beneficial. When asked about the relationship between Rising Earth Immersion and the local community program designer, Alison replied,

> Yeah, one of the biggest pieces of feedback that we received the first session that I facilitated Rising Earth, this was fall 2019, was, hey, we really feel like we're in a bubble, and it feels like most of the people who come in here are like, look the same, talk the same, know the Eco Institute (Rising Earth), we want to have more engagement with local communities, and we paired them with a mentor who is a volunteer from the community who tends to be an elder, retired person, or somebody with just a long or complex life path who can provide guidance about the next steps. (Appendix BB)

The regenerative education program can provide the opportunity to facilitate convergences at multiple scales within the socio-ecological system, including the connection between program participants and the community. These connections can create opportunities for regenerative education program participants to connect with a diverse group of people who represent the local culture, spanning age, race, gender and economic status. Increasing these connections and making room for all voices and perspectives can increase the health of the local socio-ecological system.

Insights From Bioregional Observations

What can Regenerating Ecosystems Teach us About Our Capacity For Psychological Regeneration From a Worldview of Separation. My insights from bioregional observations related to the design principle *call forth a collective vocation* centered on the role Nature can play in teaching us about our resilience. The Durango area is surrounded by human-caused ecological damage and trauma. One example is found in Hermosa Creek, a branch that feeds the Animas River Watershed. The Hermosa Creek area was damaged a few years ago by the human caused 416 fire. While the area is still in a state of recovery, it has started to heal. One

of my bioregional observations took place in the burn area and led to insights regarding our ability to recover from the harm caused by a worldview of separation,

> If this place can bounce back and begin to repair itself and even benefit in some ways after the damage from a fire, then we must have the same capacity both physically and psychologically. If we *are* Nature, then we have the same capacities and functions based on the same underlying processes. How does this recovery process work? What would this process look like psychologically to heal from the worldview of separation? (Appendix Z)

This capacity of Nature to regenerate can act as a guide and teacher regarding our ability to heal from the psychological trauma created by a worldview of separation. A regenerative education program could facilitate opportunities to connect with Nature in ways that focus on the convergence of human consciousness and the ecosystems in which we are embedded. Such aspects of a regenerative education program could aid in shifting from a dominantly egocentric perspective to an ecocentric worldview that would support a regenerative socio-ecological system. By learning from Nature's capacity to heal and recover from damage, we may better understand how we might repair our worldview of separation. The ability to witness adaptability and resilience in Nature in a region that has suffered extensive ecological trauma may be an aspect of the local vocation.

Insights From Key Informants

A Strong Sense of Community and Commitment to Nature Connection as Well as a Self-centered Consumerist Culture. Insights from key informants related to the design principle *call forth a collective vocation* highlighted that the Durango area has a culture that creates a sense of community as a small town that offers a wide range of festivals and a vibrant

downtown. Durango also offers strong Nature connection through access to plentiful outdoor recreation opportunities and green spaces. Key informants shared that Durango is also a place where self-centered, consumerist culture is also prevalent and entwined with Nature connection. These sentiments are echoed by key informant participant Werner,

> because it feels to me, I mean, the same time as we have the river running through the town, there's a real community sense, and a commitment to community, and love for nature. At the same time, there is self-centeredness, in always getting more and more and more, and I even see that in myself. (Appendix GG)

The convergence of strong community and Nature connection with individualism contributes to the unique essence of Durango, Colorado. There is an opportunity for a regenerative education program to support the development of young adults who are less driven by the dominant consumerist culture.

Merging of a Culture Deeply Rooted in Nature and a Quickly Growing Culture With Little Regard for Nature. Key informants highlighted other cultural convergences at play in the Durango area. One of these convergences is typified by aspects of the culture that have a strong relationship with Nature and the quickly growing parts of Durango's culture that are driven by development. Key informant participant Katrina shared the following when describing the essence of the Durango culture as if it were a person,

> so I get this very grounded person that has a very deep root and connection with place and nature, with also this very fast growing side that I guess if I was nourishing this person I would want to make sure that those two parts are really communicating well so that the rooting in nature is guiding the growth. So, I do see that this person has a very deep connection to the place and can be distracted easily by a lot of stimuli, and so, yeah,

> some guidance around keeping that grounding being really steady and communicating well with the parts that want to expand and grow. (Appendix FF)

The effects of these quickly growing parts of the culture can lead to some of the ecological and cultural damage that is experienced locally. The uniqueness of Durango lies in the convergence of a culture that strives to connect with Nature through outdoor activities that are largely based on egocentric behavior.

This understanding of the local culture can inform the emergence of the collective vocation. Locally there are multiple cultural convergences, including affluence and poverty, care for Nature and ecological harm, and Indigenous and colonialism. These merging cultural systems contribute to the unique identity of this place and inform the collective vocation of convergence.

Insights From Young Adults

Lack of Meaningful Experiences to Mark the Transition from Being an Adolescent to Being an Adult. Young adults offered insights related to the design principle *call forth a collective vocation* and the emergent theme of convergence by identifying a lack of meaningful experiences during the transition from adolescence to adulthood. They indicated that nothing changed, and it did not feel like there were many significant markers or indicators of the transition. The culture failed to adequately facilitate the convergence of adolescence and adulthood phases of human development. Young adult participant Antonio shared this sentiment,

> I'd say one major challenge I had to face would have to be adjusting to the transition from being a child to being considered an adult. Like I was like, there's, it seems like adults can do so much when you're younger, but I don't know, not much has really changed in, I mean, I went out to vote, but that was really all I did that was like an adult

> thing. Like, you know, I could also like, I could also technically like, register for the army or something like that, but I don't know it just doesn't feel like, it doesn't, it felt like, it definitely felt like what was I doing with my life? Like, I thought when I turned 18, everything was going to change. I thought it was going to be like, I thought it was going to be like Cinderella, I thought it was going to be magic. Like, oh, I can do everything I want now, like, but no, it's nothing really changed except the fact that this election cycle, I actually went out and voted. (Appendix JJ)

One aspect of Durango's collective vocation may be to leverage various convergences in the socio-ecological system, such as mountain and desert bioregions, as a metaphor for facilitating the transition from adolescence into adulthood.

Self-Discovery Can Take Place in Nature. Insights from young adults related to the design principle *call forth a collective vocation* identified the importance of Nature as a context for facilitating personal and interpersonal development. The opportunities for exploring and enhancing the convergence of Nature and self, seem to be central to the collective vocation of the Durango area. Young adults indicated that Nature creates a peaceful and relaxed environment for sharing with others and that meaningful self-discovery can happen in Nature. Young adult participant Maddie offered,

> When we're in nature, we like are more with our roots instead of like in a classroom where we're like, I don't think the word is trained, but like, we're taught that it's like academic and you have to think academically, but in nature, we can be more like free thought, I guess, that setting would really help people understand who they are, and be more comfortable with who they are in society. (Appendix HH)

Maddie explained that she had fond memories of participating in nature-based learning programs growing up in Durango and that these had an impact on her,

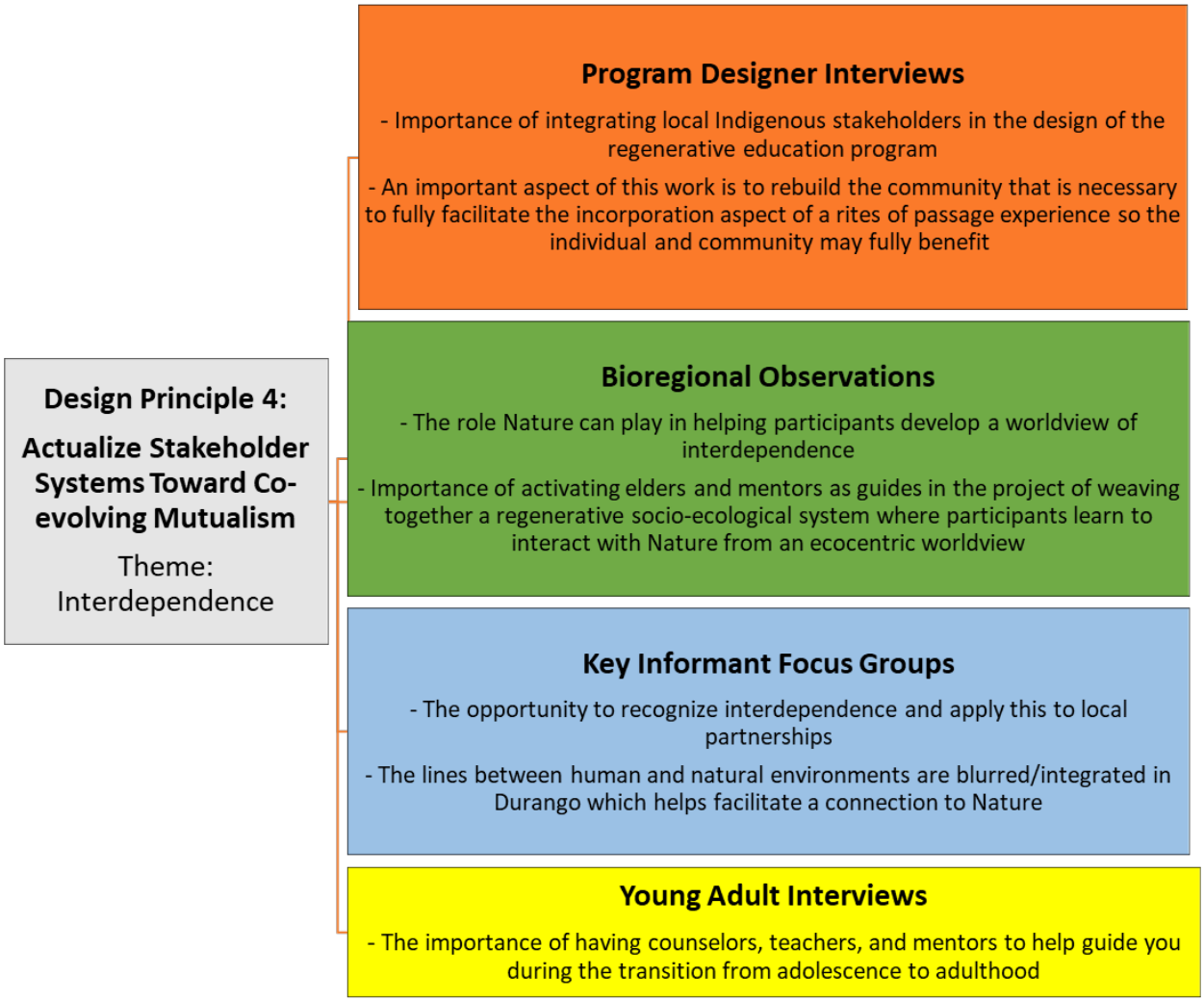
> I'm pretty connected (to nature) from growing up here. Nature's a big part of life in general. I remember in elementary school, we would always go to the Nature Study Center and learn about the nature around us, and we would go on hikes in school. I like doing activities. I feel like I'm pretty connected. I understand our ecosystem here, and I understand what nature can provide to me, and I can provide to nature. (Appendix HH)

Programs such as Durango Nature Study are an aspect of the strong Nature connection culture of the Durango area. A regenerative education program could network with local programs to support the convergence of participants and Nature in ways that cultivate a sense of self as Nature.

Theme: Interdependence
Design Principle 4: Actualize Stakeholder Systems Toward Co-evolving Mutualism
Premise: Projects should be vehicles for catalyzing the cooperative enterprises required to enable evolution.

Figure 17

Image Showing the Macro Meaning Units by Participant Category and Related to RDD Principle #4 and the Emergent Theme, Interdependence



The design principle *actualize stakeholder systems toward co-evolving mutualism* refers to the phenomenon of a regenerative project acting as the vehicle for identifying shared meaning and purpose among all involved parties in ways that allow for mutually beneficial relationships. The data relating to this design principle revealed interdependence as an important theme. By acting from a perspective of co-evolution and shared resources, individuals and organizations can begin to recognize the power of working cooperatively rather than competitively. This approach allows a regenerative project team to shift from a worldview of separation to an interconnected perspective.

Stakeholder systems can organize around a regenerative project and the collective vocation to create a synergistic effect where the stakeholders come together to create the project, which helps sustain and increase the value and capacity of the stakeholder participants. This network of reciprocal relationships is at the heart of regenerative project development and design. In this case, the regenerative project is designing and implementing a regenerative education program closely aligned with Durango's collective vocation and maximizing relationships and resources among local stakeholders.

To understand the stakeholder system, regenerative project teams often map the relationship between the nodes (organizations and people). By mapping the relationships, the project team has a visual tool that can indicate the frequency and quality of the interactions between the nodes in the system. Mapping the stakeholder relationships and identifying a local collective vocation are opportunities to realize and celebrate interdependence. Once the stakeholder network has been identified and mapped, and the local collective vocation has been identified, the regenerative project team can begin to provide opportunities for the stakeholder

community to work in mutually beneficial ways. Members and organizations can engage in the project in ways that align with their missions and the strengths of their individual members.

Insights From Program Designers

Importance of Integrating Local Indigenous Stakeholders in the Design of the Regenerative Education Program. Insights from program designers related to the design principle *actualize stakeholder systems toward co-evolving mutualism* emphasizes the importance of seeking input from local Indigenous elders in the program design and implementation process. Indigenous community members may hold ecological, cultural, and worldview knowledge that can aid in designing and developing regenerative projects. In the Durango area, the Southern Ute Tribe is subjected to the effects of cultural and ecological colonization. By highlighting the tribal members as important stakeholders, there may be opportunities for healing and the development of mutually beneficial relationships. In the development of Weaving Earth program designer, Lauren highlighted the importance of including local Indigenous communities,

> And I think that many multiple perspectives are, and life experiences are needed in order to actually address the social and ecological injustices or issues that are happening, and one other thing I wanted to say is that, in addition, in the co-founding the, we were in our, there were a number of different elders and in particular three Indigenous mentors, elders, friends that we, that really, that we worked with and continue to work with that also encouraged us to found Weaving Earth and so they didn't actually do the like founding on paper, legally, but I feel like, you know, so although the three of us, founded WE (Weaving Earth), I think that we, we founded it in, in a much wider circle. (Appendix CC)

By including local Indigenous perspectives in the design and implementation of the regenerative education program, there may be opportunities to cultivate interdependence at multiple scales. ECOSA program designer Tony Brown also commented on the importance of connecting with and learning from Indigenous communities when helping students understand regeneration,

> We do go visit the Hopi, Hopi tribe. We do a whole three-day trip to meet with elders. And the question we ask them is, you know, your culture has lasted for 1000s of years, how do you do that? You know, part of it is having a cultural memory that continues on, and you know Western civilization has been in a process of trying to destroy that culture, all the way from taking kids to put them in a school in Phoenix, to, you know, not supporting families and healthcare all those kind of things on the reservation. And so it sort of brings the students into an understanding that culture is almost as important as anything else in terms of maintaining a cultural system. (Appendix DD)

Actualizing local Indigenous stakeholders as key members of the regenerative development and design project team allows space to incorporate perspectives on reestablishing interdependent cultural-ecological systems rooted in traditional ecological knowledge.

An Important Aspect of This Work is to Rebuild the Community That is Necessary to Fully Facilitate the Incorporation Aspect of Rites of Passage so That the Individual and Community May Fully Benefit. Another insight from regenerative education program designers related to the design principle *actualize stakeholders toward co-evolving mutualism* is the importance of rebuilding a community of elders who can support the rites of passage processes necessary to encourage the formation of a regenerative culture. Program designer Meredith expressed the importance of the community when helping young adults during the incorporation phase after a rite of passage,

> You know, originally, of course, and still in a few places, the whole community was involved. When they came back, there'd be a big feast, and the people who prepared them were often, they were the storekeeper or the, they were the people in the village who were a part of the process of preparing them and then receiving them back, so it was, it was for everyone, but that is really difficult, in today's world. More and more people are finding ways to create a support system before they go out, and they return to those people and are able to tell their story and be supported by them. That continues to be one of the, the tragic lacks that we have in our culture. We need the community to be a part of that, we can find, you know, we found certain ways to do that, but it's not the same. (Appendix EE)

This insight typifies the theme of interdependence and the relationships between individuals and communities that are necessary for healthy socio-ecological systems. The integration of the individual and the community through rites of passage experiences that include incorporation and a means of moving away from individualism and egocentrism are critical to building a regenerative culture.

The relationship between the capacity of the community to support young adults in the process of finding their gifts and talents through rites of passage experiences and then facilitating the reincorporation of the individual back into the community has deteriorated in the modern dominant Western culture. The loss of elders and rites of passage experiences has created a community of "adults" who more closely resemble adolescents. The regenerative education program will look to assess and activate current opportunities within the local culture to rebuild the community of elders who can act as vital stakeholders.

Insights From Bioregional Observations

The Role Nature can Play in Helping Participants Develop a Worldview of Interdependence. Data from my bioregional observations related to the design principle *actualize stakeholder systems toward co-evolving mutualism* included highlighting the role Nature can play in helping program participants develop a worldview of interdependence. Bioregional observations led to wondering if people in Durango know how to relate to the land in a healthy, sustainable/regenerative way. It appears that one local cultural overtone is to use the land to boost social status and ego through the purchasing of outdoor equipment, embarking on new conquests of rivers, trails, and mountains, and sharing these exploits through personal interactions and social media. These sentiments were captured in my bioregional field observation,

> We are a node in the web of life, including the biotic and abiotic, and the separation of these things that we perceive is the ultimate untruth that has led to the mentality, behaviors, existence of humans that is counter to the ways of Nature. What we have currently labeled as unsustainable. It is like a sickness or mental health crisis that threatens life, including our own. How do we shift this? How do we create the conditions to educate people to remember and see our interconnectedness and live accordingly? (Appendix Y)

Pondering the role the bioregion could play as a stakeholder in supporting the development of a worldview that highlights interdependence led to some of the following questions during a bioregional observation, “what role can Nature play in helping participants develop an interconnected worldview? How do we create the conditions to educate people to remember and see our interdependence and live accordingly?” (Appendix Y). The local bioregion could play an

important role as a stakeholder in helping participants cultivate their capacity to perceive interdependence. In addition, this worldview could benefit the bioregion as participants begin to engage in local regenerative design projects.

Importance of Activating Elders and Mentors as Guides in the Project of Weaving Together a Regenerative Socio-ecological System. One of my bioregional observations offered insights regarding the uniqueness of this place and strives to understand the role the local bioregion can play as a stakeholder in the design and development of a regenerative education program and what role elders and mentors might play in helping participants learn to relate to the land,

> Why does this region draw people who enjoy the outdoors when it is surrounded by environmental and cultural trauma and abuse? What opportunities does this mix create? Do people in Durango actually know how to relate to the land in a healthy and sustainable/regenerative way? Use of land to boost social status/ego, new gear, new conquests, rivers, trails, mountains, races, and distances. How could they be invited to shift this relationship? The desire is there, but are there no elders to show the way? Are there elders? How do we identify them and call them forward? (Appendix AA)

In order to begin to rebuild a regenerative socio-ecological system, it will be important for the regenerative education design team to develop a process for identifying and engaging local community members who contain some of the perspectives, experiences, and capabilities that members of a regenerative culture embody.

Insights From Key Informants

The Opportunity to Recognize Interdependence and Apply This to Local

Partnerships. Insights from key informants related to the design principle *actualize stakeholder systems toward co-evolving mutualism* included the opportunity to recognize interdependence and apply this perspective to local partnerships. Key informant Sustainability Alliance of Southwest Colorado board member Werner offered,

> And we are truly dependent on a functional natural system, nature, that supports all life. And that's where you get back to your crisis, you know, the climate change has not hit yet. And maybe when it truly hits us a crisis, maybe it may be too late to turn around, we cannot just turn the planet around. But there's an incredible opportunity now. So the opportunity in crisis in recognizing interdependence. (Appendix GG)

The Sustainability Alliance of Southwest Colorado (SASCO) is a local non-profit organization and co-researcher in this dissertation. SASCO could act as an organizing hub for regenerative projects by activating various local partnerships that were identified in the data, including Fort Lewis College, the Southern Ute Tribe, the City of Durango, Conservation Legacy, Southwest Youth Corps, Turtle Lake Refuge, Mountain Studies Institute, San Juan Mountain Association, and Local First. These organizations provide an outline of the local stakeholder network that could benefit from being integrated into the regenerative education program. Through interacting with this existing network, SASCO could leverage and elevate the interdependence of existing organizations, people, and resources in Durango.

The Lines Between Human and Natural Environments are Blurred/integrated in Durango, Which Helps Facilitate a Connection to Nature. Another insight provided by key informants related to the design principle *actualize stakeholder systems toward co-evolving mutualism* is that Nature is an important local stakeholder and that there is a unique opportunity

in Durango to activate this stakeholder. Key informant, City of Durango Sustainability Director Imogen Ainsworth, highlighted the interface between the city and Nature in Durango,

> Like we're lucky, you know. I'm from London, where you don't walk out the door and immediately feel connected to nature, and that's different in Durango, I think, you walk out, and there's like deer everywhere. Like, for better or worse, and I don't know, wildlife and you can see the mountains, so I think we're lucky to have that, like everyday connection, yeah. (Appendix FF)

Key informant Executive Director of the San Juan Mountain Association Brent echoed the feeling of the integration of the city of Durango and Nature,

> Yeah, for me, it's like anytime I'm accessing the open space that connects to town, it's like, it's pretty incredible, just to be able to literally walk from your house or bike over to another trail system and just have that access from town. And I think that is pretty unique, anywhere in like North America, as far as I know. So, to me, that's just, just be able to be in a completely different space in just a few minutes from town on foot or bike is pretty incredible. (Appendix FF)

Key informants shared that the feeling of being embedded in Nature in the Durango area can be an opportunity to facilitate relearning how to think like natural systems and provide the opportunity to recognize and actualize interdependence with the local socio-ecological system.

Insights From Young Adults

The Importance of Having Counselors, Teachers, and Mentors to Help Guide you During the Transition from Adolescence to Adulthood. Data from young adults related to the design principle *actualize stakeholder systems toward co-evolving mutualism* surfaced the

importance of having counselors, teachers, and mentors to help guide the transition from adolescence to adulthood. Young adult Antonio shared that one thing that helped him,

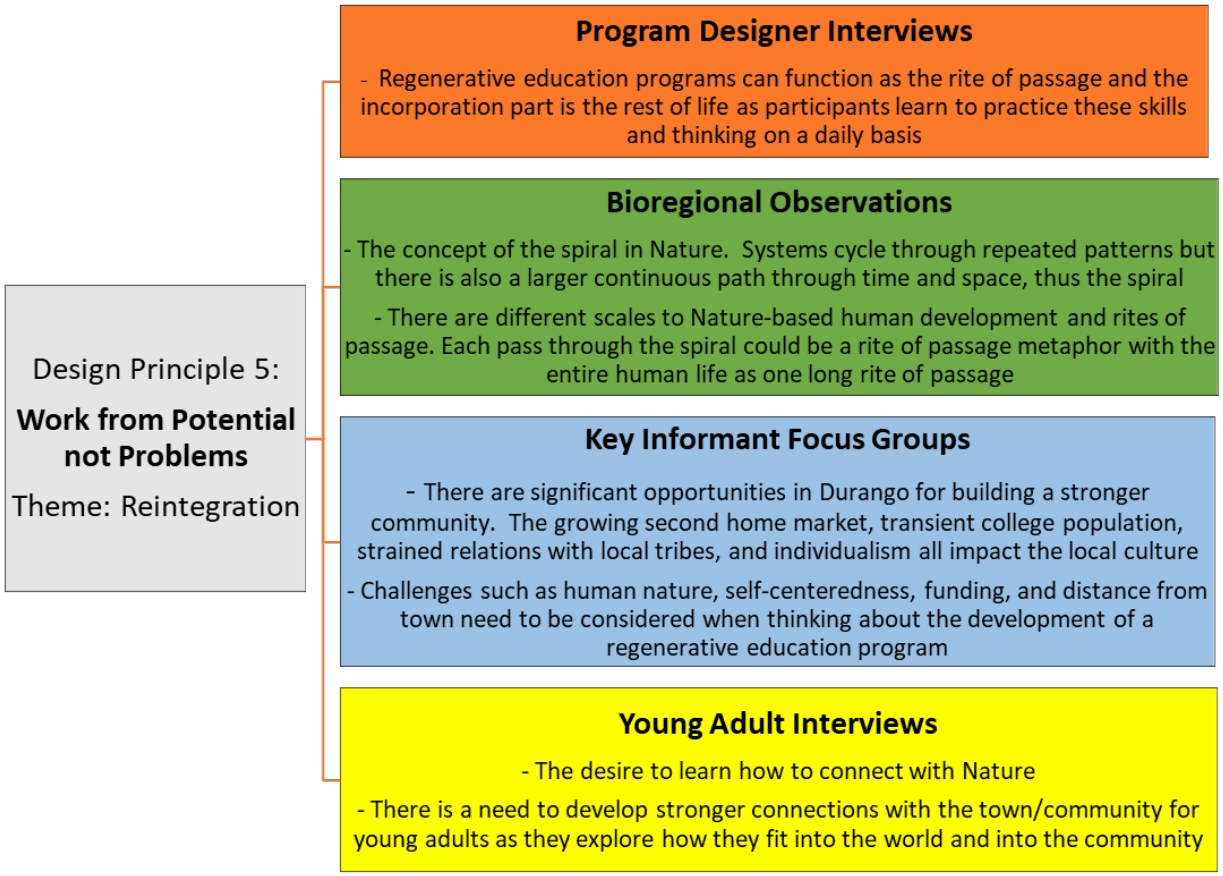
> was just being able, in high school, to get support from, teachers, faculty, whatever, like I do think going to the guidance counselor in high school does help a lot. I feel like that's something a lot of people aren't really willing to do because they're like, oh, I don't really need help. But like, even if you don't need help, it's good to see them just every once in a while, like maybe, maybe even just once a month. Like just to check on you like, check on your progress because if something happens, you know, they're the ones who are going to be able to help you, and it also just helps to have people to talk to you about your circumstances. (Appendix JJ)

The role local mentors play in helping young adults understand and live their gifts and talents is an important consideration in the design of a regenerative education program. In addition, relationships between young adults and mentors/elders can reestablish an interdependent culture that links various ages and backgrounds, which is necessary for thriving regenerative socio-ecological systems.

Theme: Reintegration
Design Principle 5: Work from Potential not Problems
Premise: Potential comes from evolving the value-generative capacity of a system to make unique contributions to the evolution of larger systems.

Figure 18

Image Showing the Macro Meaning Units by Participant Category and Related to RDD Principle #5 and the Emergent Theme, Ecological Reintegration



The regenerative development and design principle *work from potential not problems* relates to the potential of a system that comes from evolving its value-generating capacity to make unique contributions to the evolution of larger systems. Reintegration emerged as the theme from the data related to this design principle. The regenerative education project design

team can begin to uncover potential by reintegrating the various scales of the local socio-ecological system, which includes people, neighborhoods, communities, landscapes, and bioregions. According to Mang and Haggard (2016), regeneration is the process of potential moving into existence. To begin to bring potential into existence, regenerative project designers shift their focus from projects addressing problems to growing and actualizing system potential. Focusing on problems is inherently reductionist, while focusing on a system's potential reflects an interconnected worldview. Problems are often symptoms of a system's underlying structures and patterns. When we focus on solving problems, we may minimize the symptoms for some time, but the larger systemic dynamics go unaddressed.

By taking a systems approach that looks to grow potential, the system can begin to shift towards greater connectivity, health, and vitality. When using this approach, the problems start to be reduced as the byproduct of shifting the system towards regeneration rather than the problems acting as the focus of regenerative project design.

Insights From Program Designers

Regenerative Education Programs Can Function as the Rite of Passage and the Incorporation Part is the Rest of Life as Participants Learn to Practice These Skills and Thinking on a Daily Basis. Data from program designers related to the design principle, *work from potential not problems* revealed that regenerative education programs offer the potential to act as a rite of passage experience for participants, which facilitates the transition from the worldview of separation to an ecocentric worldview. Program designer Lauren Hage pointed to this outcome for participants in her program,

> Yeah, we, one way that we think about that is that we feel like we're really dedicated to the incorporation part. So, for example, since you brought up rite of passage, like in a lot

> of rite of passages experience there's like preparation, and then there's, you know, a threshold experience or a transformative experience, then there's incorporation, but incorporation is kind of the rest of your life. And so we, we've personally feel like we're really focused on the incorporation. (Appendix CC)

The goal is not to focus on the problem of a worldview of separation but to celebrate and activate the possibility for the emergence of ecological consciousness. Rites of passage experiences can provide the gateway for learning about self and place and act as the catalyst for learning to reintegrate ourselves with the systems around us to further develop ourselves and live out our unique place in the world. This reintegration process can unlock potential at multiple scales, including our potential.

Insights From Bioregional Observations

The Concept of the Spiral in Nature. Systems Cycle Through Repeated Patterns but There is Also a Larger Continuous Path Through Time and Space, Thus the Spiral. My bioregional observations also led to the concept of the spiral in Nature. Systems cycle through repeated patterns while also traveling a path through time and space, thus the spiral. This spiral pattern is also reflected in the stages of human development. My following bioregional observation highlighted opportunities to weave human development and Nature into a synergistic whole,

> Nature functions not as a circle/cycle but as a spiral which is an underlying nature pattern with unique characteristics that are place-specific, like climate/weather/flora and fauna. The spiral goes around, and it moves through time - each lap through the cycle is not an exact replication of the last lap - rather, it is informed by what came before. (Appendix Y)

The potential here is the reintegration of Nature as a primary participant in the human development process in specific places. A regenerative education program could assist participants in relating to Nature to support human development and mimic the spiral pattern.

There are Different Scales to Nature-based Human Development and Rites of Passage. Each Pass Through the Spiral Could be a Rite of Passage Metaphor With the Entire Human Life as One Long Rite of Passage. The spiral pattern in Nature offers insight into how humans grow and change over time. Just as seasons change in a cycle as time moves forward, humans go through phases of separation, transition, and incorporation as they grow from a child to a senior. The following bioregional observation pointed to the potential offered by Nature to support and inform humans development and how this could be integrated into the design of a regenerative education program,

> There are different scales to Nature-based human development and rites of passage. It is fractal. Each pass through the circle/spiral could be a rite of passage metaphor with an entire human life as one long rite of passage. Mountains to the desert to mountains. A cycle is the basis of the program design, and maybe more than one loop/cycle. Each stage has a metaphor/link to rites of passage. The program is designed fractally and through interconnected repeating cycles. (Appendix Y)

By working from potential not problems, the regenerative education program can work with the ecological system in its current state of trauma and strain from climate change and look for opportunities to reintegrate program participants in ways that allow them to both benefit from and contribute to improving the health and wellbeing of the Animas River Watershed.

Insights From Key Informants

There are Significant Opportunities in Durango for Building a Stronger

Community. The Growing Second Home Market, Transient College Population, Strained Relations With Local Trips, and Individualism All Impact the Local Culture. Data from key informants related to the design principle *work from potential not problems* indicates that there are significant opportunities in Durango for building a stronger community. The growing second home market, transient college population, strained relations with local tribes, and individualism all impact the local culture. These are symptoms of the deteriorating socio-ecological system. Key informant Brooke Safford shared,

> But yeah, I am concerned about a lot of the people that live here only part-time. Some of them live here maybe one or two months out of the year, and they're not, they're not really part of the community here, and that can definitely affect the morale of the locals, and it can definitely push out the locals too as Becky was speaking to just the cost of living here is just, really gotten high. So, just for the average person to live here comfortably on the salaries here is, I mean, they call it the Durango tango, like they're doing like two or three jobs just to survive. (Appendix GG)

These symptoms can be mended by addressing root causes in the system. The regenerative education program can play a key role in the reintegration of individuals into the community through ongoing local participant-initiated regenerative projects that contribute to building a rich community that incorporates the skills and talents of individuals that address such issues as the high cost of living through the engagement of local government in ways that focus on the potential inherent in the socio-ecological system.

Challenges Such as Human Nature, Self-centeredness, Funding, and Distance From Town Needs to be Considered When Thinking About the Development of a Regenerative Education Program. Key informants also identified that challenges such as human nature, self-

centeredness, funding, expense, and distance from town need to be considered when considering designing and developing a regenerative education program for young adults. Werner contributed the following when thinking about a potential location for a regenerative education program on a piece of land outside of town owned by Fort Lewis College called the Old Fort, "and the challenge with everything is, for example, like being up at the Old Fort is distance, and as soon as you create physical distance you also defeat affordability" (Appendix GG). When applying the design principle, *work from potential not problems*, project designers can explore the unique characteristics of the Durango area that are linked to these problems and inquire how relationships in this network/system could address these problems by maximizing local potential.

Insights From Young Adults

The Desire to Learn how to Connect with Nature. Data from young adults related to the design principle *work from potential not problems* indicated that there is a desire to learn how to connect with Nature. There is an opportunity for the reintegration of young adults into the local ecology. The reintegration of young adults and Nature can also aid in bringing forth the potential of young adults and help them find their inherent gifts and talents. The opportunity is to further cultivate the relationship between young adults and Nature to develop a more meaningful relationship with place. Young adult participant Patricia offered,

> I feel like in order to make connections and get involved with nature, you need to develop social skills. So like, that would be a need if you were in like some type of program in order to do those things. And then, like when it comes to the nature aspect, just like learning how to live in nature, I guess, and care for it. Just like here's how you make a fire, but like, stuff like that. (Appendix II)

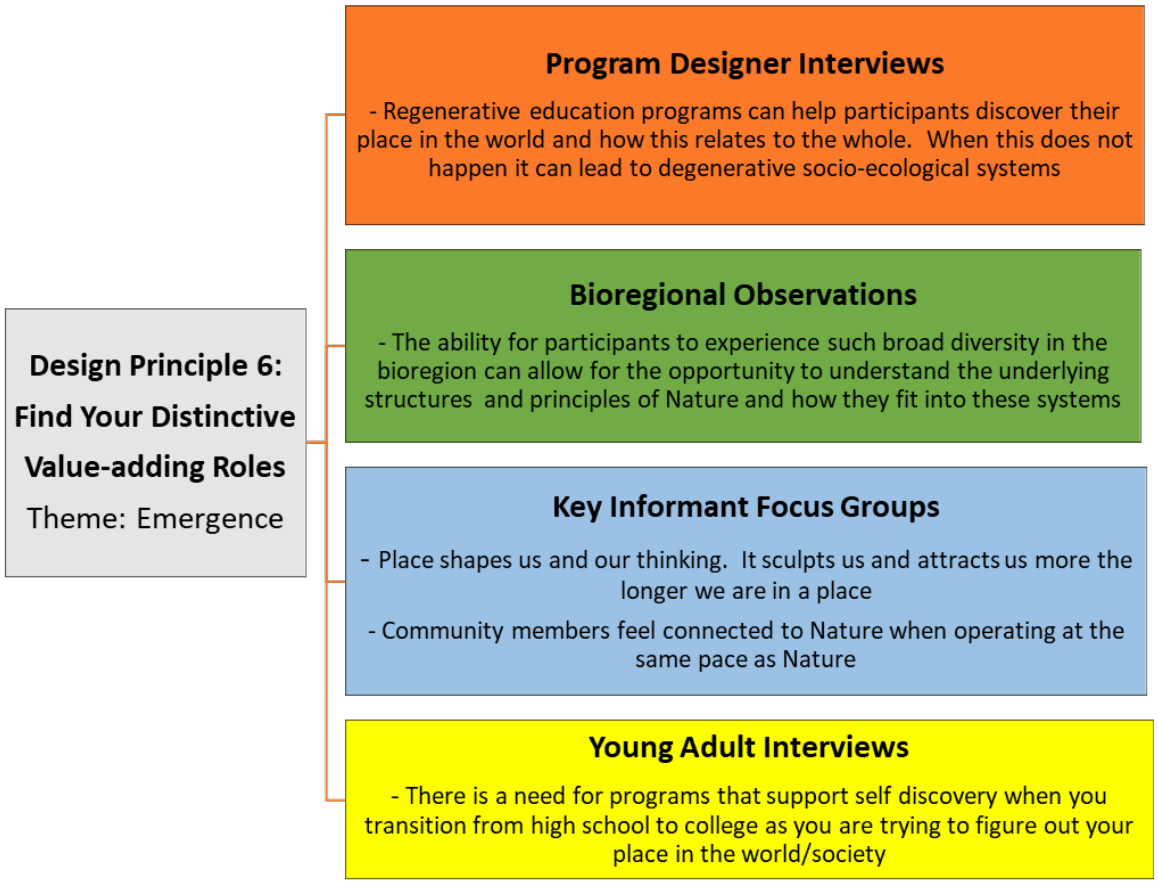
Patricia's response suggests that young adults want to connect with Nature and that despite a perceived separation between people and ecosystems in the dominant Western culture, a regenerative education program could lift up the inherent desire people have for connecting with Nature and reiterating the self as an aspect of Nature.

There is a Need to Develop Stronger Connections With the Community for Young Adults as They Explore How They Fit Into the World and Into the Community. Young adults communicated a need for reintegration with the local community. There is a desire to develop stronger connections with the community as young adults explore how they fit into the world and the culture. When asked to describe their relationship with the Durango community, young adult participant Patricia responded, “Um, I’m not really like connected with the community off campus” (Appendix II). Local stakeholders can play an important role in providing opportunities for regenerative education program students to learn, grow, and participate in the co-creation of regenerative socio-ecological systems. This process can aid in reintegrating young adults into meaningful and purposeful societal roles.

Theme: Emergence
Design Principle 6: Find Your Distinctive Value-adding Roles
Premise: The continuing health of living systems depends on each member living out its distinctive role.

Figure 19

Image Showing the Macro Meaning Units by Participant Category and Related to RDD Principle #6 and the Emergent Theme, Emergence



The regenerative development and design principle *find your distinctive value-adding roles* centers on the ability of a community to transition from identifying a collective vocation to putting regenerative practices into motion. This process involves identifying regenerative goals created around the value-adding roles of each of the nested systems of individuals, project teams, stakeholders, the project, the community, and beyond. Value-adding roles allow each of these

facets of the socio-ecological system to unlock their potential when they collectively contribute to a place's essence.

The data relating to the design principle *find your distinctive value-adding roles* surfaced emergence as a theme. Uncovering value-adding roles is a journey as the various scales of the socio-ecological system start to align with the collective vocation. The emergence of value-adding roles includes the gifts and talents of the regenerative project design team members, the program participants, ecological and cultural stakeholders, and local organizations.

Insights From Program Designers

Regenerative Education Programs can Help Participants Discover Their Place In the World and How This Relates to the Whole. When This Does Not Happen, it Can Lead to Degenerative Socio-ecological Systems. Insights from program designers related to the design principle *find your distinctive value-adding roles* foregrounded that these programs help participants discover inherent gifts and shed light on how these gifts relate to the community and that when this process does not take place, it can lead to socio-ecological system degeneration or (un)sustainability. The regenerative education program can aid in helping to clarify the local vocation and allow individuals to connect with mentors and projects that maximize their talents and allow for the emergence of their value-adding roles through subsequent student-initiated regenerative projects. Program designer Meredith described one of the intended outcomes of the rites of passage aspect of the School of Lost Borders program,

> To see that, this is, again, not just a therapeutic experience, all about me and making me whole and healthy, but that really, it's about taking my place in the context of the world, of the community, and to be able to have a sense of what my gifts are, that I have a need to bring to the, to my people. (Appendix EE)

Regenerative education programs can be designed to support the identification and emergence of the capabilities of the participants as they transition into initiated adults. This process not only can cultivate thriving individuals, but this process can also ripple through the socio-ecological system to create benefits across the system. As program designer Meredith points out, the community benefits when individuals are mentored and supported to find their place in the world,

> Well, you know, it always has, if you study rites of passage, and certainly what we emphasize is that people do not go out only for themselves, but we go out for our people, that it means nothing, vision is nothing unless we're able to bring it all the way around and begin to act on it, and bring the gift of what we were shown about who we are, what our gifts are, to bring that back to our people, to our community. And so now, with a lack of that in our culture, it also is, it causes disease and imbalance in the community itself. (Appendix EE)

When the culture creates structures, processes, and possibilities to help young adults discover their value-adding roles, they can contribute to the place-vacation, fulfilling its role within the widening spheres of a healthy socio-ecological system.

Insights From Bioregional Observations

The Ability for Participants to Experience Such Broad Diversity in the Bioregion Can Allow for the Opportunity to Understand the Underlying Structures and Principles of Nature and How They Fit Into These Systems. Data from my bioregional observations related to the design principle *find your distinctive value-adding roles* identify opportunities to learn from the diversity of landscapes in this bioregion, and how this diversity may relate to stages of human development. The following bioregional observation surfaced the

idea that the local bioregion can play a value-adding role as the template for regenerative education program design, as well as opportunities to cultivate ecological consciousness and a guide for future projects that arise from the emerging partnerships within the region as a result of the educational program, “how can taking the students to these different places (parts) help them understand the whole (nature) and the underlying structure and principles of nature and how they fit into it” (Appendix Z). The local ecosystem can play a role in supporting nature-based human development. Exploring place diversity can lead to inner and outer discoveries that bolster the emergence of initiated adults who understand their place in the world and how to contribute in meaningful and positive ways.

Insights From Key Informants

Place Shapes Us and Our Thinking. It Sculpts Us and Attracts us More the Longer We Are in a Place. Key informant discussions uncovered the realization that place shapes people and our thinking. It sculpts and attracts us more the longer we are in a place. One of the value-adding roles of place, is to help inform how we act and think as we learn to embrace and reflect local cultural and ecological patterns. A place's impact on us psychologically and physically emerges over time as we develop a deep kinship with a particular place. Key informant Katrina surfaced the idea of how the ecology of a place affects us,

> I guess I would say that I feel like our place really shapes who we are and, and that's the beautiful thing about Durango, is that our land, you know the relationship that we have with our land, luckily is available and there are a lot more people who are attracted to come here, maybe because of the wild, open spaces, but then we all get shape-shifted by the place. And so, we, it starts to sculpt us and sculpt our thinking and so I, I also agree with what has been spoken about every day we get this opportunity to be continually

> shaped by our place from going out to watch the sunrise or getting out in the snow or finding ourselves in different habitats, as often as we can, you know, that it almost attracts us more the more we're here, the more that opens, hopefully. (Appendix FF)

The ecology of a particular place can play an important role in shaping individuals and cultures. A regenerative education program that encourages the emergence of ecocentric worldviews and actions could focus on the interplay between human psychology and place.

Community Members Feel Connected to Nature When Operating at the Same Pace as Nature. Data from key informants related to the design principle *find your distinctive value-adding roles* indicated that the feeling of being connected to Nature increases when we operate at the same pace as Nature, including walking or sitting. Slowing down to connect with Nature is an important part of learning about place. According to key informant Katrina,

> I guess the way that it works for me is to go out and just sit on the land and connect. Walk on the land and go at the pace that so many other creatures are living at, which is within very regional timeframes and, and locales, so going at the pace, which would be walking pace generally or sitting pace even, to be present to the other rhythms and, and heartbeats that are simultaneously living here with us. So, to connect with this place means to slow down a lot from our pretty busy society lifestyle and drop into more of a nature's pace as often as possible. (Appendix FF)

Slowing down and observing and participating in Nature allows for the emergence of an awareness of what the natural world has to teach and reminds us that we are Nature. These realizations can allow for creative place-sourced systems designs that allow culture to operate with, rather than over/against, Nature.

Insights From Young Adults

There is a Need for Programs that Support Self Discovery When Transitioning From High School to College While Trying to Figure out One's Place in the World. Data from young adults related to the design principle *find your distinctive value-adding role,* including the need for programs to support self-discovery when transitioning from high school to college. This is an important transition as young adults try to figure out their place in their community and the larger society. There is a need in culture for people to discover their value and purpose, and this is especially important when transitioning from adolescence into adulthood. Young adult Maddie offered insights related to a need to be better supported in the transition from adolescence to adulthood that would help shed light on her place in the world,

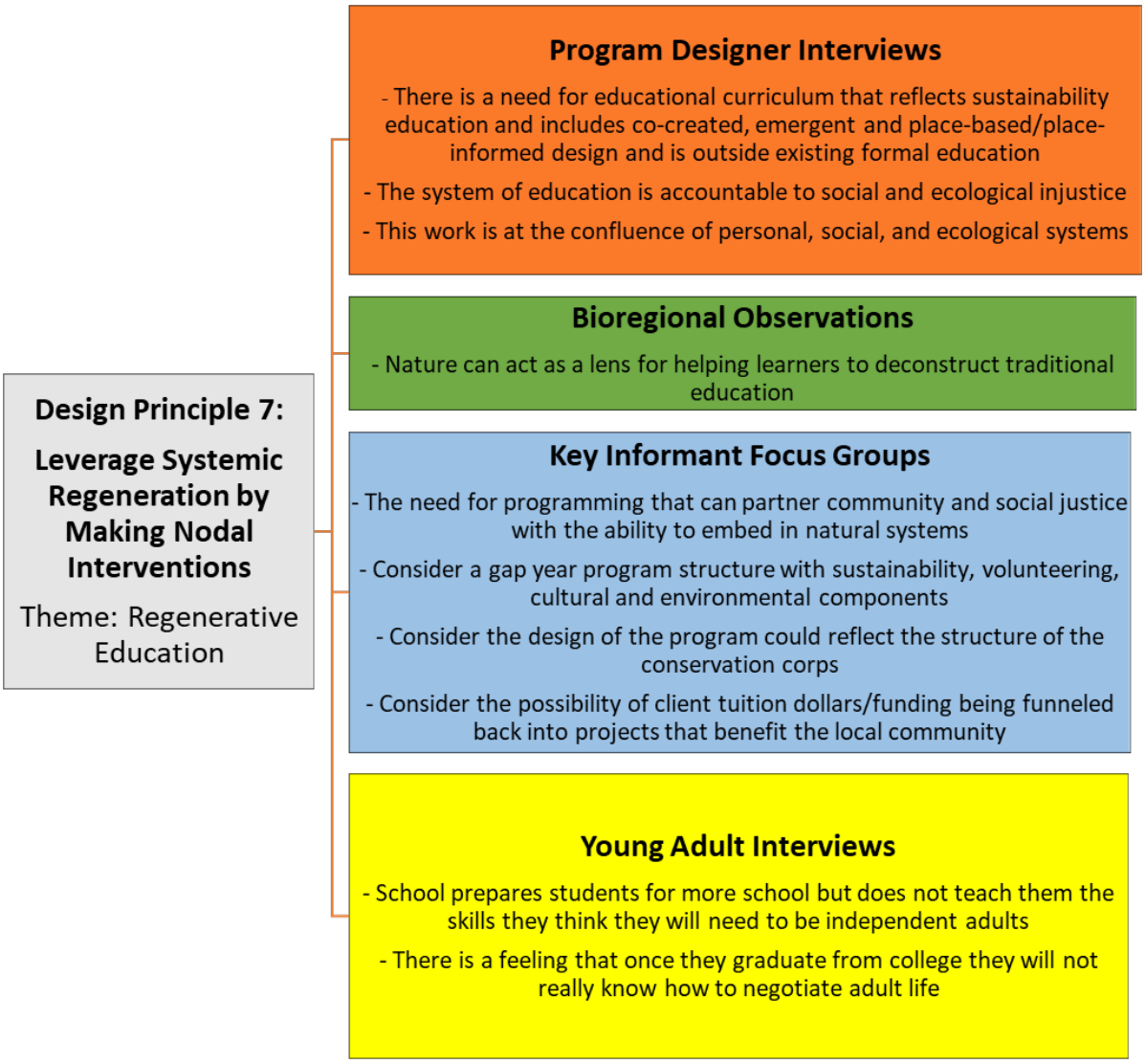
> Kind of like that self-discovery idea and kind of understanding of who we are in the world, because we've gone from like a high school, we, like, you know you're with the same peers, and then you're kind of put into the real world, a little bit more. So, you're trying to figure out what's your place. So, I think a program like that could really help me and others kind of find our place in society. (Appendix HH)

Regenerative education programs can offer the value-adding role of facilitating this transition into adulthood through programmatic offerings that include Nature, community, and rites of passage experiences that help clarify participants' sense of self. This journey of self-discovery and transition into adulthood is a process of emergence that takes place over time and is most effective when intentionally facilitated by elders and community members.

Theme: Regenerative Education
Design Principle 7: Leverage Systemic Regeneration by Making Nodal Interventions
Premise: Small conscious and conscientious interventions in the right place can create beneficial, system-wide effects

Figure 20

Image Showing the Macro Meaning Units by Participant Category and Related to RDD Principle #7 and the Emergent Theme, Regenerative Education



The regenerative development and design principle *leverage systemic regeneration by making nodal interventions* refers to the ability to perceive the things around us as systems

composed of dynamic, interconnected nodes. These nodes in the socio-ecological system include individuals, various components of the ecosystem, organizations in the community, project team members, and other stakeholders. The idea is to encourage shifts in the system by implementing changes in these nodes that allow the potential of the systems to emerge. While local efforts toward sustainability are already underway, these are often based on minimizing cultural and environmental problems, which are inherently reductionistic and preserve the current dominant culture and associated systems without addressing the underlying systemic dynamics. Regenerative change will come from the development of systems thinking and ability to identify a collective vocation, the emergence of value-adding roles in alignment with the collective vocation at multiple scales, and interventions in the socio-ecological system at the nodal level to actualize local potential. One such intervention could be developing and implementing a regenerative education program as a new node in the system.

Regenerative education emerged as a theme from the data related to this design principle as this is a critical nodal intervention that can take place within the local socio-ecological system. Introducing a regenerative education program can aid in teaching systems thinking, allowing program designers, participants, and members of the local culture to develop the ability to perceive the systems around them and engage in ongoing nodal interventions that can encourage further regeneration.

Insights From Program Designers

There is a Need for Educational Curriculum That Reflects Sustainability Education and Includes Co-created, Emergent, and Place-based/Place-Informed Design and is Outside Existing Formal Education. Program designers recognized the need to educate participants in ways that fall outside traditional structures and approaches to education which

they contend perpetuate current worldviews that encourage harmful relationships with ecosystems and others. Program designer Lauren discussed the role traditional education has played in creating and perpetuating the separation of humans from each other and the land and how the Weaving Earth program is applying a critical lens to education,

> We started it because we were seeing that a lot of educational programming was, were addressing the social and ecological issues in silos, rather than as a whole system or whole circle or addressing the relationships in between or the interconnection in between. So that's one reason why we started it, and then another is that we, we, we basically feel like education in itself as an energy force, as an entity, is accountable to the many social and ecological injustices that exist in our world. And so, so we basically are looking at how, how do we actually do education that is accountable to education's role itself in perpetuating systems of dominance over the earth and also over people. (Appendix CC)

Sustainability education programs for young adults such as Rising Earth are designed to challenge the assumptions and frameworks of mainstream education, and the role education has played in ecological and cultural destruction and colonization. For these reasons, many of the program designers in this research study have created programs that not only fall outside of traditional education but aim to critique the content, thinking, and approaches used in educational models that perpetuate the dominant culture's worldview.

The System of Education is Accountable to Social and Ecological Injustice. Program designer Lauren shared that it is important for young adult sustainability education programs to confront the role traditional education has played in Western society and its effect on cultures, ecosystems, and students. Lauren offered that the Weaving Earth program looks to be conscious of the role of education,

> How can education actually be accountable to, to the injustices that have happened and are still happening and then also how can education be accountable to what else is actually possible, and we, remembering or reclaiming or relearning or responding to dignity love, justice, equity, ecologically and socially and so yeah we focus our work at, it's really at the confluence of, of personal, ecological and social systems change. Because we, like, so all of our work has an eco-social collaboration component to it, and which weaves in the personal because I think, you know, all of that intersects in us. (Appendix CC)

In essence, regenerative education is at the intersection of self, culture, and ecosystems and the attempts to restore these into an integrated socio-ecological system. These programs can help students understand how these areas are intertwined and that a regenerative culture will require educational approaches that weave these back into a synergistic whole.

Regenerative education directly responds to the role mainstream education has played in social and ecological destruction within the dominant Western culture. By introducing this alternative method of education, rooted in systems thinking, as well as social and ecological justice, this nodal intervention could play a significant role in shifting culture.

Insights From Bioregional Observations

Nature Can Act as a Lens for Helping Learners to Deconstruct Traditional Education. Data from my bioregional observations related to the design principle *leverage systemic regeneration by making nodal interventions* pointed to the role Nature can play in acting as a lens for helping learners deconstruct traditional education. The data also revealed an opportunity for a regenerative education program to facilitate linking community and social

justice education and embedding it into natural systems where participants' relationship to Nature is emphasized. One of my bioregional observations shed light on these concepts,

> To help learners deconstruct that learning only takes place in the mind by exploring here, understanding diversity is important, and that diversity of thinking, using all the senses, and different ways of knowing can bring new insights. Help learners deconstruct traditional education. By seeing flora and fauna in unusual combinations. Less boxing/categorizing/labeling. Increased flexibility and interesting new combinations. Help students gain insight from the intermeshed mountains and desert ecosystems that learners and the object of study are intermeshed and entangled, not separate. Used as a metaphor to encourage the formation of worldviews that are interconnected. Understand how this place of in between is interconnected and part of the mountains and interconnected and part of the desert and that in many ways, the desert is the mountains - same water, same minerals - broken down rocks, etcetera. (Appendix Z)

Nodal interventions in the education system could ripple into nodal interventions in the developmental process of young adults, where Nature-based human development is once again prioritized. A regenerative education program would enact nodal changes that help reconnect and reintegrate various aspects of the socio-ecological system through ongoing student-initiated regenerative education projects.

Insights From Key Informants

The Need for Programming That can Partner Community and Social Justice With the Ability to Embed in Natural Systems. Community members, organizations, and the local ecosystem are significant nodes within a socio-ecological system. When considering the design of a regenerative education program that is intended to bring these three areas together while

improving social justice, key informant Becky articulated her thoughts about what a regenerative education program could look like,

> Not separating the built environment from, like, oh, wildness is out there, and you have to go backpacking. So having it, having a bridge be to the local social justice issues where there's a mix of connection to wildness and being embedded in wildness and systems that are bigger than yourself, but, some kind of work that's, that's connected to, like, looking at the social side of what it takes to support communities like this. How many people are working in the back of a house of restaurants, how many people are struggling with, with, you know, basic needs and say safety and security? So, some, some kind of work that allows for both, I guess, and I know being vague but like partnering the social, community, safety, security, well-being, with this ability to have embeddedness in natural systems. (Appendix GG)

By introducing a new node into the system in the form of a regenerative education program, there may be opportunities to improve the health of this system's social and ecological aspects.

Consider a Semester or Gap Year Program Structure With Sustainability, Volunteering, and Cultural and Environmental Components. One of the primary considerations when introducing a regenerative education program into the system as a new node is the program's design, which affects how it relates to other nodes in the system. Key informant Brooke shared the following thoughts when considering the duration and structure of a program for young adults,

> I did a gap year, each of us in my in my family and all the kids. We spent a year abroad, right after high school, and I lived with a family in France, and I think, I mean, that was pivotal to my personal growth and just, you know, that I mean, and I went to school

> there, but even if I hadn't gone to school, there was a very educational opportunity. Well, I think that even offering something that's like a semester-long honestly could be really valuable too, and, yeah, I mean within that semester-long program, you could have maybe three different projects that you work on or maybe two different projects, and they see the fruits of their labor too right where they see something actually happening or changing. (Appendix GG)

Brooke went on to add additional detail to the content of the program where she stressed the need for a regenerative education program to draw connections between personal development, social justice, and Nature connection,

> The other thing too that comes to mind is something that I wanted to do but there's already so many organizations doing it, is having a program where kids are volunteering, you know, maybe even abroad or something but it's all sustainably based, it's all about, so that they, not, they're not only volunteering, which is really wonderful thing to give back to learn how to give back because our culture is so much about being, you know, the selfies and all of that, so I feel like we can always learn, you we can always do more and more of that of giving back. But also, you know, there's some kind of cultural and environmental component to it where it's so enriching, that it just, it just completely changes their lives and that's, they almost change their, they like, they base their decisions based on that experience, you know when you have such an enriching experience like that, where people can come together and create positive change. (Appendix GG)

Brooke touched on the power that giving back to the community can have on individuals and how these experiences can create the ability to move away from self-centeredness. By

introducing a regenerative education program as a node, new paths arise for young adults to engage in activities that focus on giving back.

The Design of the Program Could Reflect the Structure of the Conservation Corps. Key informants offered that one model the regenerative education program could look to when considering a design framework is the conservation corps. This model employs young adults and provides services that give back to the local social and ecological systems. Becky highlighted the strengths of this approach for young adults,

> There is like the whole Southwest Conservation Corps that's more of like trails and labor-based, and I have a sense that you're, you know, that might be a part of maybe your vision but that it is also a little different. It has a transformative component to it. But somehow, you know, connecting the, connecting the groups that, that have the knowledge of land and place to help access the things we've been talking about the beauty and the wonder and the inspiration of wild places because we have all this access to wildness, which I think is really wonderful. (Appendix GG)

The conservation corps not only connects participants to the local ecosystem, but it is also designed in a way that allows young adults to be compensated and receive career training rather than paying for a semester or gap year style program. This design opens the door for a more diverse population to benefit from the regenerative education program.

The concept of creating value for participants and having the program be truly supportive of young adult growth and development while including some type of payment was reinforced by key informant Brent,

> I definitely think that age group is a great one to target for like paid work, and I think a lot of times, like when I was looking at when I was looking at education programs, you

> know, college, it was like, it's expensive right, and everything costs money, and basically I think that does, that is why they're all like affluent, kids that are able to like go into those programs, so to the extent we can offer paid programs, and it's like a ladder to the working world, and I think when you go down that path SCC, Southwest Conservation Corps is another partner. So, I do think you could kind of tie educational components together with paid work opportunities for youth. (Appendix FF)

The ability to pay participants is an important consideration. The nodal intervention of introducing a regenerative education program into the socio-ecological system might be designed in such a way as to bring maximum benefit to individuals, communities, and the local bioregion.

Consider the Possibility of Client Tuition Dollars Being Funneled Back Into Projects That Benefit the Local Community. Insights from key informants related to the design principle *leverage systemic regeneration by making nodal interventions* included consideration of various regenerative education program design elements that could maximize systemic change. Key informants suggested a gap year program structure with interwoven sustainability, volunteering, and cultural and environmental components. Another suggestion from key informants is to have program dollars and resources funneled back into projects that benefit the local community. Brooke offered,

> I don’t know, anyway, it’s, and maybe that money gets funneled back into something good. Who knows, you know you could do so much. Even with that, that, you know, it’s, it doesn’t have to be necessarily a for-profit venture. (Appendix GG)

A truly regenerative project would be designed in ways that do not extract resources, including money, from the socio-ecological system but instead channel these back into the systems in the way that organic gardens recycle materials in the garden through place-sourced compost.

Insights From Young Adults

School Prepares Students for More School but Does not Teach Them the Skills They Think They will Need to be Independent Adults. Interviews with young adults revealed that one glaring gap in the dominant education system is the lack of preparation to transition into adulthood. Young adult Anthony offered,

> Yeah, I feel like, for many schools, there's a very big emphasis, emphasis on continuing education, rather than preparing for alternative routes, like going to the work industry or job market. A lot of emphasis is on getting to college which is not a bad thing. I mean, look at where I'm at. But it's such a big focus that it kind of tunes out like, real life skills besides like schoolwork. (Appendix II)

Whether or not young adults continue with formal education beyond high school, they will all eventually need to be able to function as independent adults who can contribute positively to a healthy society. Unfortunately, it seems that formal education falls short in this area and that introducing a regenerative education program for young adults as a nodal intervention could address some of these needs.

There is a Feeling That Once They Graduate from College, They Will not Know How to Negotiate Adult Life. Data from young adults related to the design principle *leverage systemic regeneration by making nodal interventions* indicated that formalized education often does not help students learn how to transition into adulthood. Young adult Anthony communicated how he did not feel prepared to become an adult,

> real-life applicable problems. I don't, I still, like, I'm almost 20 years old, and I still don't know how to balance a checkbook or, not saying that if they taught that in class I'd be a good student, or pay attention, but having like, resources like that, especially when

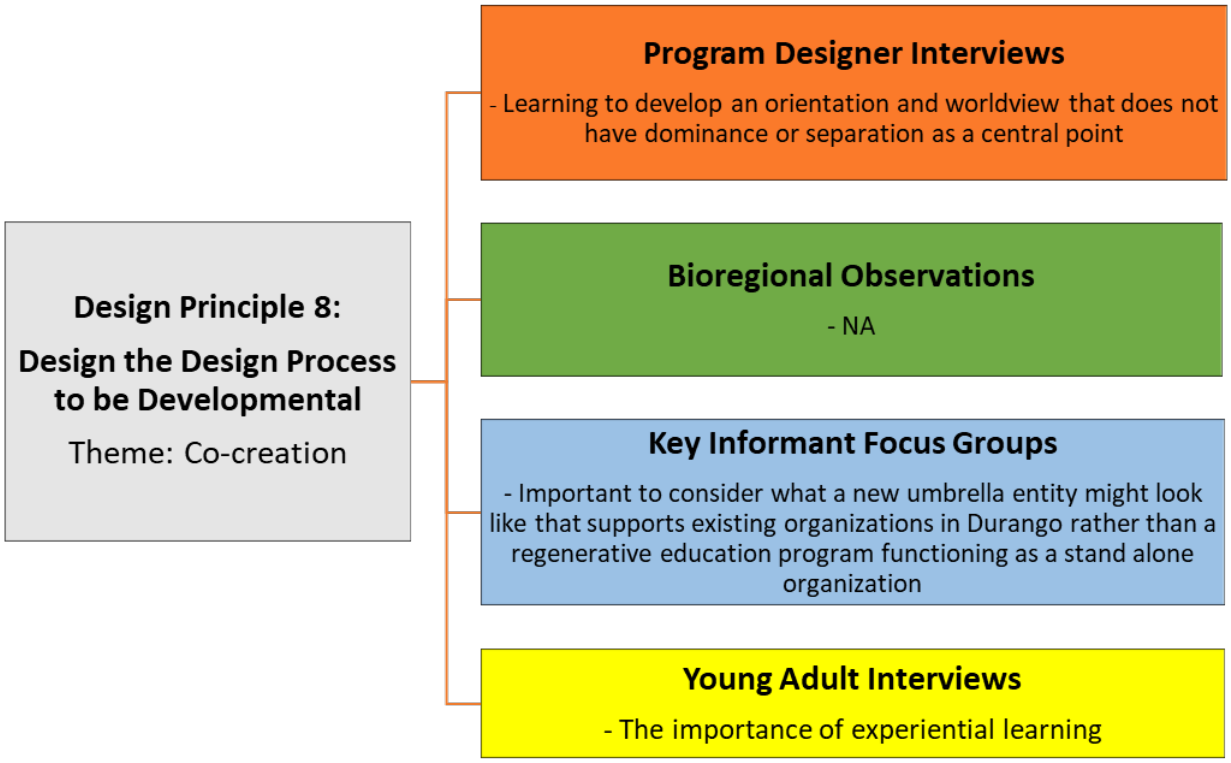
> you're, you're going to high school, or you're coming out of high school or something, that's very, you know, important. (Appendix II)

Young adults shared that school prepares students for more schooling, such as higher education, but does not teach them the skills they think they will need to be independent adults. There is a feeling that once they graduate from college, they will not know how to negotiate adult life. Young adults need support systems and opportunities to discover how they can be personally fulfilled while adding value to their community. These experiences could be embedded into a regenerative education program that would create ongoing nodal interventions as the program participants launched various local regenerative projects that engaged the local community and ecological system nodes.

Theme: Co-creation
Design Principle 8: Design the Design Process to be Developmental
Premise: A project can only create systemic benefit within a field of caring, co-creating, and co-responsibility.

Figure 21

Image Showing the Macro Meaning Units by Participant Category and Related to RDD Principle # 8 and the Emergent Theme, Co-creation



The design principle, *design the design process to be developmental*, refers to the importance of the design process itself when engaging in regenerative projects. According to Mang and Haggard, (2016), the relationship between the regenerative project design team and the community is important and is highlighted by co-responsibility, respect, and trust. This design principle also indicates that the regenerative education program design process should

mimic the approaches that the regenerative education program will look to instill in the participants.

The theme of co-creation surfaced from the data related to this design principle. Systems of oppression, separation, and colonization are one-sided and arise from domination. Co-creation is based on a worldview of interconnection. The project design process needs to be aligned with the local collective vocation and create space for individuals to engage in ways that accentuate their strengths, relationships, and resources. Regenerative development and design projects create an environment of reciprocity where individuals and communities can mutually benefit. Regenerative development and design projects offer the opportunity for local people to co-create a shared vision and closely aligned regenerative projects.

Insights From Program Designers

Learning to Develop an Orientation and Worldview That Does Not Have Dominance or Separation as a Central Point. Data from program designers related to the design principle *design the design process to be developmental* elucidated that one of the outcomes of these programs is for participants to learn to develop an orientation that does not have dominance or separation as a central point. One of the desired outcomes for participants of regenerative education programs is for them to begin to shift their worldview away from separation, domination, and colonization, as this worldview leads to behaviors that unravel healthy socio-ecological systems. Program designer Alison surfaced this important point during her interview,

> Our program is designed primarily to address the personal transformation and personal transformation of participants. And that, that transformation, the one that privileges a worldview or is going towards a worldview that is wider, that is broader, that takes into

> consideration the well-being of all kinds of people. This question is at the root of what I'm struggling with about this program, to be honest. The Rising Earth curriculum is intended to shift participants into a way of thinking that considers much more than themselves and to equip them to bring change in consideration of the more-than-human world, different marginalized populations, and the future descendants of us all, with a life-path that is not only contributive but sustainable and meaningful as well. (Appendix BB)

It is important for regenerative projects to model an interconnected systems perspective at every scale. Therefore, the design and development of the regenerative education project is an opportunity to facilitate a design process that co-creates a vision and develops mutual respect and trust between the design team and community members that allows for the discovery of a collective vocation/potential. In contrast, project members and stakeholders learn to work collaboratively as they move away from operating in ways that reinforce domination.

Insights From Bioregional Observations

There were no insights from the bioregional observations that directly related to the design principle *design the design process to be developmental*.

Insights From Key Informants

Important to Consider What a New Umbrella Entity Might Look Like That Supported Existing Organizations in Durango Rather Than a Regenerative Education Program Functioning as a Stand-Alone Organization. Insights from key informants related to the design principle *design the design process to be developmental* revealed the need for more local collaboration. Key informants shared that it might be important to consider what a new umbrella entity might look like that supports existing organizations in Durango rather than a

regenerative education program functioning as a stand-alone organization. There are many community assets in Durango, and there is a tendency for people to start another nonprofit or organization instead of connecting to the existing organizations. They indicated that it might be interesting to consider what might it look like to create a structure to support what is already taking place here. Key informant Becky provided the following perspective,

> I mean, it's great that we live in a place that has so many people committed to helping, you know, with food security with environmental issues with outdoor education, but like, you know, not, sometimes and so, you know, sometimes there's a new idea, it might immediately goes to like what new thing can we create what new nonprofit can we make, or what new institute and I, I like the idea of thinking through what's already here that can maybe, you know, be an umbrella or help complement and support the work that's here. (Appendix GG)

There is an opportunity to leverage the existing organizations in the system and weave them together through mutually beneficial relationships rather than working from a scarcity, separation, problem, and competition worldview. Sustainability, conservation, and social justice organizations could begin to understand how to better leverage shared resources and co-create projects, programs, and services, as these can be magnified by working together.

Insights From Young Adults

The Importance of Experiential Learning. Regenerative education programs can pull from a wide range of constructivist approaches to education that aim to facilitate co-created learning environments. These approaches allow students and teachers to explore content in ways that honor the students' voices, interests, and perspectives. One of the most effective methods of educating this way is experiential learning. Young adult participants highlighted the need for

experiential learning. When asked about the type of learning that would support her, young adult participant Patricia responded,

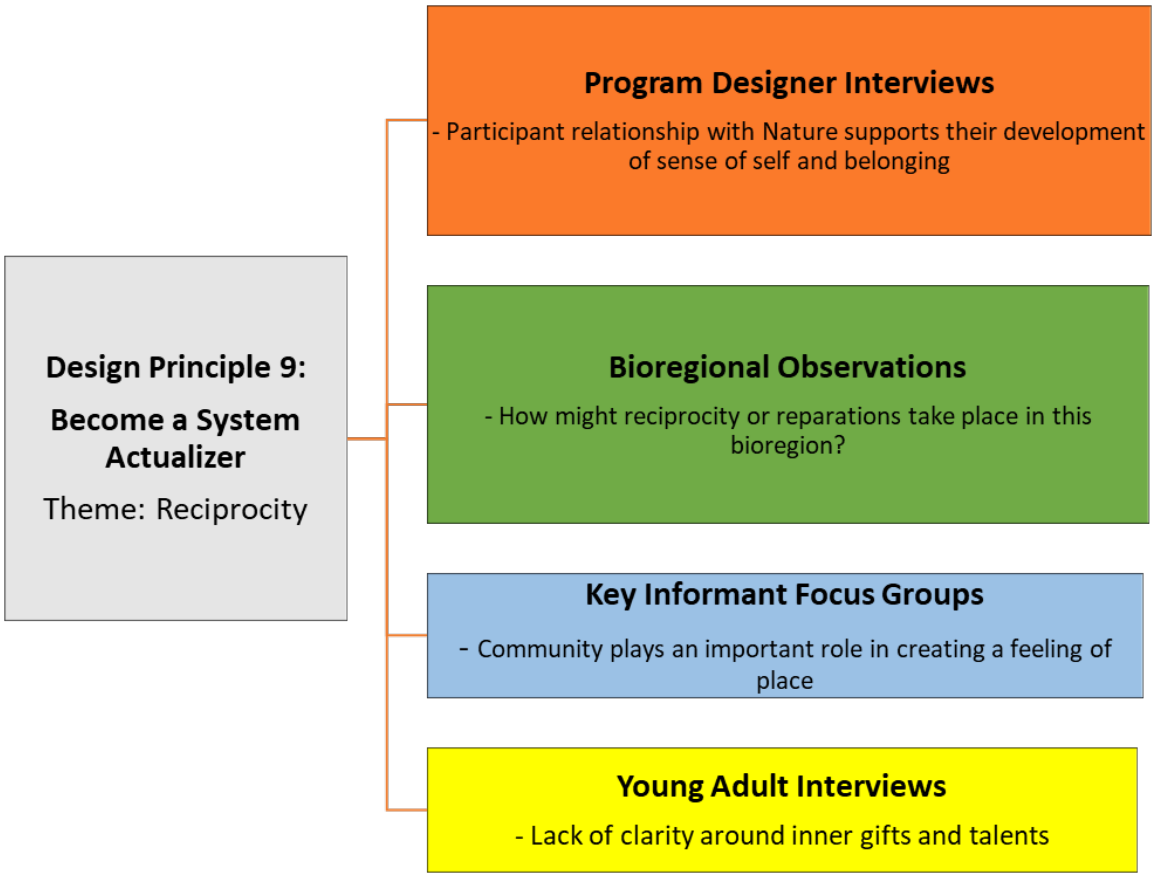
> I think like a program, or like something that's more hands-on with like, those, like paying your bills, or like learning how to do the real world stuff, I don't know how to explain it like, like, those multiple things, like being more hands-on instead of just like listening to someone talk about how to do it, actually bring it, give it to them, and let them do it themselves. Or like, practicing it, and like taking students to the actual place, and then having them do it. I think that would help me. (Appendix II)

Data from young adults related to the design principle *design the design process to be developmental*, included the importance of experiential learning. Young adults yearn to learn about themselves and their place in the world through direct experiences. This process is a co-creative approach to learning that integrates the learner, the content, and the context. Therefore, regenerative education programs can allow students to engage in student-led regenerative development and design projects that integrate personal and collective development. Subsequently, these projects will be further opportunities for co-creation as program participants work with local stakeholders and community members to identify and initiate these efforts.

Theme: Reciprocity
Design Principle 9: Become a System Actualizer
Premise: The actualization of a self requires the simultaneous development of the systems of which it is a part.

Figure 22

Image Showing the Macro Meaning Units by Participant Category and Related to RDD Principle # 9 and the Emergent Theme, Reciprocity



The design principle *become a system actualizer* is about the inner transformation that occurs when one fully engages in the design and development of regenerative projects and the effects this process has on the surrounding systems. To enact regenerative change, regenerative project members must undergo personal regeneration. This process includes redesigning their own thinking and ways of being in the world to reflect the type of work they are trying to bring

forth. Embedded in regenerative work is a perspective that all systems are interconnected and that regenerative design projects flow outward from individuals. Part of being a regenerative practitioner is to regenerate systems, including ourselves. It is through this relationship between the regeneration of the self, community, and Nature that true regeneration can take place. The theme that surfaced from the data related to the design principle *become a systems actualizer* is reciprocity. Reciprocity captures the essence of the multifaceted process of inner and outer/project regeneration and the associated ripple effects of the ongoing exchanges inherent in regenerative development and design projects that offer mutual benefit.

Insights From Program Designers

Participant Relationship With Nature Supports Their Development of Sense of Self and Belonging. Insights from program designers related to the design principle *become a system actualizer* foregrounded that these programs play an important role in participants' relationship with Nature and that this relationship supports their development of a sense of self and belonging. When individuals work towards their potential and actualization and work to help the actualization of the community, it creates healthy, integrated place systems. Nature can act as a template and opportunity for the actualization of self and community. When people are in a relationship with Nature, they feel the reciprocal effects of coming to know themselves in deeper and more authentic ways.

Program designer Meredith explained how the School of Lost Borders program facilitated personal development through Nature connection and how this process has a reciprocal effect. The more time people spend in Nature, the deeper this connection becomes, and the more participants expand their understanding of themselves,

Every afternoon we send them out into nature, walking, asking, opening to the wisdom that comes always from being in the context of nature itself. And so for young people, and for most of the open vision fasts that we offer, youth and adults we meet on the land, we camp together, we lie down on the ground, and sleep and, which often is one of the first times that people have ever done that, and the, there's something about these simple acts of lying on the, sleeping on the ground, and being, seeing the vastness of the sky at night, that we can only, there's a wisdom, there's a teaching that comes that could only be gotten that way. It's like it's a part of our DNA, and if we don't activate it, it's not accessible to us. So, we meet together for a number of days, three, four, sometimes more days, in final preparation. And then, of course, people go out and live alone, without food for three, four days depending on the group within a mile or so of basecamp in case, they need help. But one of the things, in order, realizing that one of the most important things that our people need in this culture is to recognize that we are nature, and not to have that false sense of we're separate from nature. And so we brought into that what we offered, traditionally often rites of passage were done where people would stay in one place for three or four days, and we realized that because our modern people really don't know what it's like to even, to have a relationship with the land, we had, we allowed people to during their three or four days alone to walk the land, to be in, engage in the relationship with the land. And they'd have their own basecamp, their own little home, that was close to getting help, that they could go out even though that made it more risky for us. That felt important and trying to put other elements into it that would activate to help people to feel the context of what it means to be human. And so, all of it was done in nature, and we would really encourage people a year after the threshold time that we shared with

> them to go out again and to begin to use the land as a source of understanding. (Appendix EE)

Not only does time in Nature build a reciprocal relationship between individuals and Nature, but this connection also actually extends to the community. Meredith went on to state,

> It's an experience where people often, for one of the first times, truly feel connected with the whole, with the bigger, with, feel their place and the context, not just of themself and of their family, but they feel the importance of their place in, what do you call it, the big, all, everything, that everything is interconnected and that they're a part of it. And to hear the stories when they come back, I'm often so, I don't know why but it surprises me so often to hear them come back, often one of the things I hear is that last night we often will suggest that they do an all-night vigil, stay awake, be with the sky, and they will have an experience where, where they feel like they're just so, so small. And yet the flame of who they are, is, makes a difference, they feel the importance of their place, even in a world where there are billions of us. It's so easy not to feel important. Instead, they feel their place in the context of the whole, and so, that changes us. To see that, this is, again, not just a therapeutic experience, all about me and making me whole and healthy, but that really it's about taking my place in the context of the world, of the community, and to be able to have a sense of what my gifts are, that I have a need to bring to the, to my people. (Appendix EE)

Such experiences in Nature can be the impetus to self-actualization and create reciprocal relationships between self, Nature, and one's role and purpose within the community.

Insights From Bioregional Observations

How Might Reciprocity or Reparations Take Place in this Bioregion? Data from my bioregional observations related to the design principle *become a system actualizer* raised questions about what reciprocity might look like in this bioregion. This bioregion has been impacted culturally through colonization and ecologically through the effects of hard rock mining and the oil and gas industries. Data suggested that ecological damage and trauma of this bioregion may provide an opportunity for repair and reparations projects that are born out of the regenerative education program and that the actualization of these systems may provide opportunities for the self-actualization of the participants.

One of my bioregional observations related to the principle *become a systems actualizer* raised the following questions, "How can repair/regeneration take place? How might reciprocity/reparations take place? What might this look like?" (Appendix Y). A regenerative education program could explore these questions and possible answers by connecting participants with Nature and supporting their ability to become self-actualized as they participate in projects that contribute to the health and well-being of the local ecosystem by utilizing their newfound capabilities and interests.

Insights From Key Informants

Community Plays an Important Role in Creating a Feeling of Place. Data from key informants related to the design principle *became a system actualizer,* highlighted the important role community plays in creating a sense of place. There is an opportunity for the regenerative education program to be an organizing hub and play an important role in helping to establish a more well-connected community that would, in turn, create a local culture that enhances the enjoyment of that community as an extension of the place identity.

Key informant Imogen offered,

> I think for me, this kind of slowing down and connecting with the, with the landscape but also connecting with people. I think I get a sense of place when, not just from the land and the landscape, but also from the people that I interact with and kind of that vibrant, like sense of community, as part of, as an important part of place as well. (Appendix FF)

Just as a connection to Nature can play a role in self-actualization, the same can be true about the connection between individuals and the community. A sense of self and self-worth can be found in connection with others.

Insights From Young Adults

Formalized Education Often Does Not Address Helping Each Student Identify and Develop Their Unique Gifts and Talents, Especially if They Are Not Relevant to the School Setting. Adding a regenerative education program into the Durango socio-ecological system that focuses on personal development, rites of passage, connection to mentors, and time in Nature could offer young adults the opportunity to participate in an education program that clarifies their calling in life. Data from young adults related to the design principle *become a systems actualizer* revealed that young adults can feel a limited sense of understanding of their inner gifts and purpose. For example, when asked if she knew what her fits and talents were, young adult participant Maddie responded, “Yeah, yeah, besides working with kids and teaching, I don’t really know” (Appendix HH).

Young adult participants were asked if formal education had helped them understand themselves beyond academics. Maddie went on to share,

> I think yes or no. I think like thinking back to like high school, you’re given some ideas of like hey, here are some like art classes if you’re in the arts. But those are like the more traditional, like you can be in music, or in art or in painting. There aren’t really a lot of

> programs for people who don't really identify with, like the classic (education). Like I didn't identify with art or music or anything like that. I more identify helping people, and there weren't really many programs like that. I think at the college, there's some programs like that but not a lot. (Appendix HH)

There seems to be a lack of a consistent approach to helping students explore and experience the non-academic side of their personalities within the dominant education system. A regenerative education program could offer support and guidance in this area through nature-based human development and connections with mentors and elders in the community that allow for self-actualization through reciprocal relationships.

Summary

The data revealed eight emergent regenerative development and design principle aligned multiscale themes. The first theme was ecological consciousness. This theme revealed the importance of the development of ecological consciousness and system thinking skills in program participants and project stakeholders to encourage a shift away from a worldview of separation. The second theme that emerged was convergence. Durango is a place that is defined by various convergences across the socio-ecological system and this unique property is central to the design of a regenerative education program. The third theme to surface was interdependence. This theme related to the desire expressed by research participants to become more connected to themselves, their community, and the sounding bioregion. The fourth emergent theme was reintegration. Research participants voiced the importance of reintegrating various aspects of the local socio-ecological system that has become compartmentalized and divided through modern culture and a loss of mentors and rites of passage. The fifth theme that was identified in the data was emergence. Emergence is an important characteristic of complex systems. Key informants

expressed the importance of slowing down and spending time in Nature to allow for the emergence of a deeper sense of place. Young adults expressed that they are going through a process of self-discovery which takes place over time, as their gifts and talents begin to emerge. The sixth theme revealed by the data was regenerative education. Research participants voiced the need for an intervention in the socio-ecological system that would help young adults transition into adulthood while connecting them to Nature and the larger community. The seventh emergent theme was co-creation. The data indicated that co-creative processes are important when considering systemic shifts toward regeneration. The final theme to surface was reciprocity. Regenerative projects offer the opportunity for participants to shift their thinking and engage in both internal and external regeneration that includes regenerating the self.

Chapter 5: Discussion

Interpretation and Discussion of the Findings

The dominant Western culture is heavily impacted by a worldview of separation, which undermines the health and well-being of socio-ecological systems (du Plessis, 2012; Gibbons et al., 2020; Wahl, 2016). The field of sustainability education aims to develop pedagogies and approaches to educational design and delivery that can shift the worldview of separation, as this is at the root of the climate crisis, social injustice, and economic inequality (Nolet, 2015). Regenerative development and design cultivates a deep understanding of context so that human-designed systems are co-created with individuals, communities, and ecosystems rooted in place (Mang, & Reed, 2020; Mang & Reed, 2012a; Raymond et al., 2013). This dissertation innovated a research design and an approach to place-informed educational design by applying regenerative development and design principles to the design of a regenerative education program. This study uncovered needs and opportunities in the Durango socio-ecological system and provided insights into how a regenerative education program may work to support the health and vitality of this system.

The findings from this study furthered the research agenda regarding the socio-ecological systems framework, place-based education, regenerative development and design, and the role rites of passage may play for adolescents during their transition to adulthood. This chapter represents the fifth pass through the hermeneutic spiral. My understanding of the research phenomenon (whole) solidified through a hermeneutic interpretation of the research data/text (parts). This understanding was integrated into existing literature and presented as recommendations related to regenerative development and design principles.

Figure 23

Depiction of the Hermeneutic Spiral Structure of the Dissertation Chapter 5

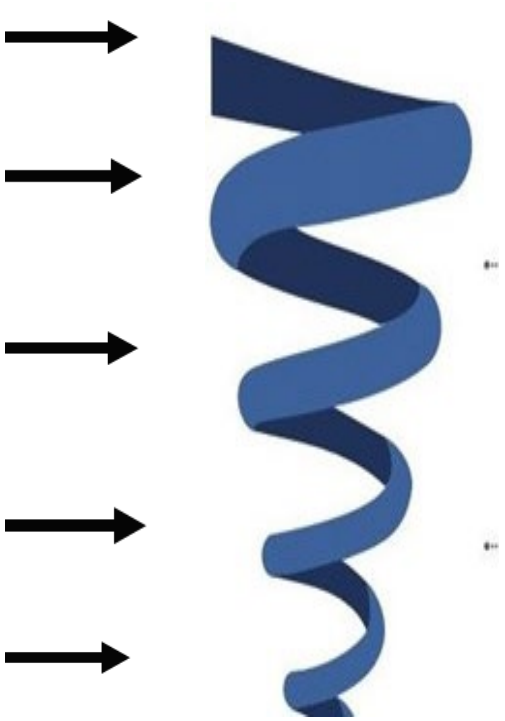
Pass # 1: Chapter 1 - Understanding of the research phenomenon (whole) through theoretical foundations of Sustainability Education course work (parts).

Pass # 2: Chapter 2 - Understanding of the research phenomenon (whole) through the literature review/articles (parts) and a growing understanding of the gap in the research.

Pass # 3: Chapter 3 - Understanding of the research phenomenon (whole) deepens through the research design and the implementation of the methodology and methods (parts).

Pass # 4: Chapter 4 - Understanding of the research phenomenon (whole) through a hermeneutic analysis and of the research data/text (parts).

Pass # 5: Chapter 5 - Understanding of the research phenomenon (whole) through a hermeneutic interpretation of the research data/text (parts) and the recommendations as applied through the 9 Regenerative Development and Design Principles.



Recommendations, Implications and Conclusions

The results of this study identified and described the needs and opportunities for a regenerative education program in the Durango, Colorado, area. These needs and opportunities were uncovered through inquiry into three aspects of the local socio-ecological system; bioregional observations (Nature), key informant focus groups (community), and young adult interviews (self). Insights from these methods were paired with wisdom from founders and elders of other young adult sustainability education programs to inform the application of regenerative development and design principles to educational design. Findings from the study revealed eight regenerative development and design principle-aligned themes that spanned the three levels of inquiry in the socio-ecological system.

The eight emergent themes were identified through multiscale data analysis across participant categories and their affinity with one of eight regenerative development and design principles. While there are a total of nine regenerative development and design principles, principle number two, *design with place*, was deemed central to the dissertation data collection and was represented through bioregional observations, key informant focus groups, and young adult interviews and was embedded in the final organizing system (Figure 14). The following are recommendations for a regenerative development and design team to carry this work forward in Durango, Colorado. The recommendations include the associated design principle and the multiscale emergent theme. In this chapter recommendations are expanded upon to draw connections to current relevant literature and curricular examples for applying the recommendations within the Durango socio-ecological system. When systematically overlaid with the regenerative development and design principles, these findings provide a robust roadmap for a project design team to carry this research forward.

Hermeneutic Synthesis of Multiscale Themes and Recommendations for Designing a Regenerative Education Program in Durango, Colorado

The following section provides a hermeneutic synthesis of the emergent multiscale themes and offers a summary of their relationship to the literature and curriculum implications. Curriculum suggestions are limited to my perspective as one of the stakeholders in this system. Full regenerative education program design and implementation is intended to be carried out by a co-creative process based on the recommendations in this section and further input from a design team and various stakeholders within the socio-ecological.

Design Principle 1: Design for Evolution
Theme: Ecological Consciousness
Recommendation: Partner with existing organizations in Durango that facilitate Nature intimacy experiences to provide opportunities for regenerative education participants to develop ecological consciousness.

For members of society to engage in regenerative work, they will need to develop an ecocentric worldview and the associated systems thinking skills which will help them design human systems that embody the capacity to evolve. Nature is a template and the context for providing the wisdom to develop ecological consciousness. There is an opportunity to partner with existing organizations in the Durango area to facilitate Nature connection opportunities for young adults, which could support the development of ecological consciousness.

Ecological consciousness is particularly important when considering approaches to education. Educational curricula that encourage the formation of ecological consciousness strive to shift from a perspective of isolation to a holistic or relational view of reality (Tynan, 2021). Ecological consciousness in education supports a worldview where teachers, students, schools, humans, more-than-humans, content, concepts, consciousness, and the world are a rich, interwoven system that is composed of separate but related and deeply connected expressions of the whole (Morrision, 2002; Nazir, & Pedretti, 2016). Effective ecocentric educational methods also move away from teaching in ways that mimic traditional subject-oriented learning, as this approach may increase scientific knowledge about ecosystems or sustainability concepts while failing to embody pedagogical strategies that increase the formation of ecological consciousness. Ecological consciousness formation comes from changes in the individual's consciousness when they move from knowing about ecology to perceiving, thinking, and behaving in ways that are ecological and in line with the patterns and structures of specific ecosystems (Miroshkin et al., 2019).

To achieve the educational outcome of students developing ecological consciousness curriculum needs to involve strategies that connect participants to the environment, encourage them to care for the environment, and build agency for the environment in ways that allow students to think and engage in critical and creative ways (Ganatsios et al., 2021; Nazir Pedretti, 2016; Vieira et al., 2022). When students and teachers are able to step beyond the classroom and engage in place-based and place-informed learning, various aspects of the socio-ecological system can support the co-creation of ecological consciousness experiences (Bonnett, 2021).

Durango has a plethora of for-profit and nonprofit organizations that provide programming, volunteering, and community engagement opportunities for interacting with Nature in and around town. Curriculum design recommendations include partnering with these organizations to facilitate experiences for participants to fully situate themselves within the local ecosystem by slowing down, walking, and sitting to psychologically take in the earth (Morrision, 2002). The curriculum can blend Nature conservation, outdoor recreation, scientific research, naturalist activities, nature-based rites of passage, Indigenous ecological knowledge education, and mindfulness activities to develop participants' experience of the Animas River Watershed and the multitude of more-than-human inhabitants. The participants can then apply their growing ecological consciousness and understanding of self, community, and bioregion as they engage in local regenerative development and design projects that repair and regenerate the local socio-ecological system while continuing to enhance a sense of place and ecocentric worldviews.

Design Principle 3: Call Forth a Collective Vocation
Theme: Convergence
Recommendation: Harmonize with the various converging systems in the Durango area, including cultures, worldviews, stages of human development, and bioregions.

Durango's collective vocation may be reflected in the convergence of various aspects of the local socio-ecological system. The Durango area represents convergences at multiple scales,

including Nature and culture, ecocentric and egocentric worldviews, community participation and self-centeredness, mountain and desert landscapes, Indigenous and colonizer cultures, and individuals at various stages of human development. Durango's collective vocation, or unique quality, is reflected in how these different aspects of place come together to reveal place-specific needs and opportunities.

The convergence of Nature and culture has been recognized as an important area of study in sustainability (Birkeland et al., 2019). Frameworks such as the socio-ecological framework have emerged to recognize and study the interactions and relationships between human systems and natural systems. Yet, these frameworks still struggle to convey the dynamics of this relationship without implying or replicating dualistic thinking (Boulangeat et al., 2022). The approach to educational design reflected by the use of regenerative development and design principles put forth in this dissertation aims to address the worldview of separation that dominates subject-oriented learning, curricular design, and false Nature/human dualisms that are perpetuated in dominant Western education institutions (Narvaez et al., 2019). Even place-based educational methods can unintentionally reinforce systems of colonization and dominance when failing to acknowledge and honor Indigenous stewardship and traditional ecological knowledge of the land on which learning is taking place (McCoy et al., 2016; Torrents-Ticó et al., 2021).

Convergence of Nature and human development, including rites of passage, have also been identified as relevant to the worldview of separation and sustainability discussion (Duncan, 2019; Plotkin, 2016). Narvaez (2014) has suggested that the loss of nature-based human development in modern Western societies has led to the development of worldviews that perceive humans to be separate from the earth, the proliferation of immature adults who

prioritize consumerist behaviors, and the prolonging of the transitional phase between adolescence and adulthood (Lipska & Zagórska, 2021).

Regenerative education curriculum recommendations related to convergence include establishing relationships with the Southern Ute Tribe and drawing from land based educational practices that centralize decolonization, ecocentric worldviews, and Indigenous perspectives (McCoy et al., 2016; Redvers, 2020). This approach to education can offer opportunities for building intercultural understanding that can lead to increased sustainability (Lertzman, 2002). A regenerative education program in Durango can also look to integrate nature-based human development models and rites of passage experiences facilitated throughout the Animas River Watershed. The transition from the Southern Rockies bioregion to the Colorado Plateaus offers the backdrop for regenerative education program participants to experience metaphors that can be integrated into human development. The wellspring of life that emerges from the mountains in the summer at high elevations to the mid-elevations that offer a crossover between the bioregions reflective of the transition from adolescence to adulthood and the lowlands of the high desert where life lies below the surface and things appear cracked, dry, and life seems more precarious are all reminiscent of life's journey.

Design Principle 4: Actualize Stakeholder Systems Toward Co-evolving Mutualism
Theme: Interdependence
Recommendation: Activate stakeholders at various scales of Durango's socio-ecological system to work collaboratively, including the bioregion, community members, mentors, and Indigenous peoples, to support the development and design of a regenerative education program.

By acting from a perspective of co-evolution and shared resources, individuals and local organizations can begin to recognize the power of working cooperatively rather than competitively. There are needs and opportunities for interdependence, including building relationships between regenerative education program participants and local mentors,

stakeholders, organizations, and ecosystems. Forming a regenerative education program and the resulting ongoing local regenerative projects can be a catalyst for connecting stakeholders in ongoing mutually beneficial relationships that add to the vitality and health of the region.

Interdependence is closely linked with ecocentric worldviews and systems thinking, which are necessary aspects of a regenerative socio-ecological system. Multi-stakeholder partnerships reflect ecological patterns and prioritize collective action and maximize resource use. Eweje et al. (2020) identified multi-stakeholder partnerships as key to implementing the United Nations' sustainable development goals. This research indicates that multi-stakeholder partnerships formed and institutionalized across various interacting scales of the socio-ecological system can support the ability to achieve sustainable development goals. Research has also identified that ecological and cultural issues are interconnected and are increasing rapidly. MacDonald et al. (2019) suggest that collective capacity and knowledge are necessary to address these issues and that this can be achieved through stakeholder partnerships across private, public, and civic sectors.

Curriculum recommendations to build interdependence in Durango's socio-ecological system include forming multi-stakeholder partnerships to inform the design and development of a regenerative education program. Once the regenerative education program is established, this new entity could serve as a nexus for ongoing multi-stakeholder interactions, partnerships, and mutual benefit. One aspect of the regenerative education program is to teach students regenerative development and design skills and then work with local stakeholders to identify needs and opportunities for implementing various regenerative projects that could benefit the community and bioregion. These projects might range from addressing housing for the unhoused population in Durango, increasing production and access to locally grown food, increasing

awareness of water usage, efforts to implement sustainability education within the local school system, building partnerships with the local Indigenous tribe, or contributing to efforts to conserve and protect the land. Regenerative education participants can also gain career experience through internships with participating stakeholders and add value to these companies by implementing regenerative strategies throughout these organizations. All of these strategies increase interdependence throughout the socio-ecological system.

Design Principle 5: Work from Potential, not Problems
Theme: Reintegration
Recommendation: Reintegrate various aspects of Durango's socio-ecological system by engaging regenerative education program participants in ongoing regional regenerative development and design projects that build on local potential.

To bring potential into existence, regenerative project designers can shift their focus from addressing problems to growing and actualizing system potential. Focusing on problems is inherently reductionist, while focusing on a system's potential reflects an interconnected worldview that can generate systemic change. The regenerative education program design team can begin to uncover potential by reintegrating the various scales of the local socio-ecological system, including people, neighborhoods, communities, landscapes, and bioregions. Regenerative education programs can help reintegrate young adults into the fabric of the community by honoring their gifts and talents. This program can also contribute to reintegrating Durango's cultural and ecological aspects. This pattern was congruent with the literature review, which revealed that the field of sustainability education is largely concerned with developing a systems perspective and the reintegration of self, community, and Nature. Mang and Reed (2012) highlight a strengths-based approach to systems change when using regenerative development and design by focusing on identifying and building on the potential of a particular place rather than starting from a deficit perspective that focuses on reducing problems. One

method for identifying place potential is through asset-based community development, which can also help participants gain a deeper understanding of their region (Miller et al., 2018). In addition, community asset mapping strategies can contribute to sustainable development, including identifying and magnifying the voice of underrepresented, underserved, and marginalized community members (Mosavel et al., 2019; Wildman et al., 2019).

Curriculum recommendations for a regenerative education program based in Durango include teaching program participants to lead community asset mapping initiatives to identify and maximize local potential. Community asset mapping can help uncover overlooked stakeholders and hidden resources and act as a catalyst for reintegrating various aspects of the socio-ecological system that have become disconnected. In addition, once a community asset mapping process has been completed, this information can be highly valuable for informing ongoing student-led regenerative projects.

Design Principle 6: Find Your Distinctive Value-adding Roles
Theme: Emergence
Recommendation: Surface emerging value-adding roles that align with the collective vocation and support the ongoing regeneration of the Durango area.

The process of uncovering value-adding roles is a journey of emergence as the various scales of the socio-ecological system align themselves with the collective vocation. Identifying value-adding roles includes the emergence of the gifts and talents of the regenerative project design team members, the program participants, stakeholders, the ecosystem, and local organizations. A regenerative education program can help facilitate the process of uncovering and supporting value-adding roles across these scales. The regenerative development and design processes are meant to be iterative. The design of the regenerative education program begins to establish and renew relationships that lead to increased connectivity, resilience, and the opportunity for even more connections through future projects. These connections begin to

increase the number and quality of exchanges within the system leading to the creation of value that benefits individuals, communities, and Nature in support of evolution that improves the system's health.

Mang and Haggard (2016) identify value-adding roles as shifting the focus away from the products or services a project may produce to the role the project and stakeholders play within a series of nested systems. By considering regenerative projects from this perspective, stakeholders can think about the capabilities and qualities the project will bring to the system. In the case of the work presented in this dissertation, the value-adding role of the regenerative education program is to facilitate thinking and processes that bring greater connection to self, others, and Nature. Another element of a place-specific regenerative project is that its value-adding role should be designed to continuously evolve and improve its ability to regenerate the socio-ecological system (Mang & Reed, 2012).

One approach to identifying and maximizing the value-adding roles that individuals and networks of diverse stakeholders can play that minimizes economic transactions and emphasizes co-creation, reciprocity, and resource sharing is the formation of a "sharing culture" (Katrini, 2018; Light & Miskelly, 2015). Sharing culture is a framework that highlights the value-adding roles individuals and stakeholders bring to social networks separate from the economic value they bring. Furthermore, this method of networking with others allows community members to share resources and knowledge based on solidarity and reciprocity, which aligns with regenerative development and design principles and increases regional sustainability (Katrini, 2018).

Regenerative education curriculum recommendations include teaching program participants and stakeholders system thinking skills. Developing systems thinking skills can

bring awareness to the characteristics embodied by complex adaptive systems. These characteristics involve a focus on the relationship between parts of the system, including participants and stakeholders, as well as evolution and emergence. By focusing on teaching systems thinking skills regenerative education, participants and stakeholders can begin to think in systems which can allow them to more effectively identify the value-adding role they can play within Durango's socio-ecological system as well as the importance of being able to continuously evolve with the systems they participate in.

Design Principle 7: Leverage Systemic Regeneration by Making Nodal Interventions
Theme: Regenerative Education
Recommendation: Implement a regenerative education program as a nodal intervention that continuously generates other nodal interventions within Durango's socio-ecological system.

Regenerative education programs can act as a critical nodal intervention that includes co-created, place-based, and place-informed approaches to teaching and learning. Regenerative education programs can act as educational conduits for healing social and ecological trauma while creating opportunities for growing the capacity, health, and vitality of local communities, ecosystems, and participants. The ability to initiate nodal interventions requires the capacity to develop a deep understanding of a socio-ecological system and look for points within the system where changes will have the largest impact on systemic regeneration (Mang & Haggard, 2016). Regenerative projects, including designing and developing a regenerative education program, can significantly impact multiple interconnected systems. The ripple effect of nodal interventions can encourage the system to move toward a regenerative or degenerative state, depending on the intervention's ability to work with existing cultural and ecological relationships (Dias, 2018). Places for nodal interventions within systems are often identified as places where a combination of the quality and quantity of system connections lend themselves to creating systemic change

that could maximize the potential of the system, resulting from small changes in the system (Gibbons, 2019).

Curriculum recommendations for the regenerative education program in Durango include the place-informed design and development of the regenerative education program and the design and development of ongoing student-initiated regenerative projects. As students learn systems thinking skills and regenerative development and design skills, facilitate multi-stakeholder partnerships, lead community asset mapping initiatives, and spend time developing a deep understanding of the local bioregions, they will be able to identify and implement various regenerative projects throughout the region. Working with various stakeholders to identify and shepherd these projects will create opportunities for ongoing nodal interventions that encourage Durango's socio-ecological system towards a state of regeneration. Within these projects, there will be ample opportunities to support participants as they gain valuable insight into their natural gifts and talents and their value-adding roles emerge.

Design Principle 8: Design the Design Process to be Developmental
Theme: Co-creation
Recommendation: Engage in co-creative processes which encourage participants to move away from systems of domination and colonization.

Regenerative development and design projects promote an environment where individuals, communities, and ecosystems can mutually benefit. This process is largely based on co-creation rather than dominance and separation as the central orientation. It is important for the project design process to be aligned with the local collective vocation and create space for individuals to engage in ways that accentuate their strengths, relationships, and resources. Regenerative development and design projects offer the opportunity for people to co-create a shared vision that honors experience as members of a local community.

According to Mang and Haggard (2016), regenerative project teams need to foster a sense of connection and caring that permeates all stages of project development, including once the project seems to have been completed. The relationships within a regenerative project stakeholder team should embody strategies that allow for co-creation, co-creativity, and co-responsibility (Mand & Haggard, 2016). This approach to project design and development begins to reflect the type of power with versus power over mentality that is central to socio-ecological system regeneration and establishes collaborative decolonizing human systems. This approach extends across all members of the community and ecosystem to honor and reflect their input and voice. Co-creation strategies within diverse stakeholder networks have shown to be important for implementing sustainable innovations (Moons et al., 2021). Engaging a wide range of stakeholders and ensuring widespread support for sustainability solutions, including implementing the United Nations' sustainable development goals, can emerge from co-creative processes (Ansell et al., 2022).

Curriculum recommendations for the regenerative education program include identifying and training the regenerative education project design team and program participants in existing frameworks for co-creative design processes. It is important for the development team, stakeholders, and participants to begin to model and engage in approaches to design and decision-making that mimic the types of thinking that regenerative education program participants learn during the program and reflect an interconnected worldview. Regenerative education project team members, stakeholders, and participants can be trained to follow various co-creation strategies such as the design choices framework (Lee et al., 2018), the co-creation design framework (Frow et al., 2015), or the sociocracy framework (Owen & Buck, 2020).

Design Principle 9: Become a System Actualizer
Theme: Reciprocity

Recommendation: Actualize personal potential by shifting thoughts and actions towards regeneration. The formation of a regenerative education program in Durango can invite team members, participants and stakeholders to engage in an ongoing cycle of reciprocity between inner health and socio-ecological system health.

Regenerative project members undergo personal regeneration to enact regenerative change. This process includes redesigning thinking and ways of being in the world to reflect the type of work regenerative project team members and stakeholders are trying to bring forth in the community. Embedded in regenerative work is a perspective that all systems are interconnected, and regenerative projects flow outward, emanating from individuals. Part of being a regenerative practitioner is to regenerate systems, including ourselves. Reciprocity captures the essence of the multifaceted process of inner and outer/project regeneration and the associated ripple effects of design projects that offer mutual benefit. Regenerative education programs can contribute to ecological and cultural acts of reciprocity throughout the socio-ecological system.

Mang and Haggard (2016) perceive self-actualization as one outcome of engaging in regenerative development and design work, not the goal. Individuals looking to develop their full potential within the framework of regenerative development and design are doing so in ways that shift self-actualization from being about an isolated self to a continuous emergence of value-adding roles that support larger living systems. When self-actualization becomes a process of regenerating the self while regenerating the larger systems that individuals are part of, this creates a reciprocal effect of inner and outer whole system regeneration.

Curriculum recommendations for the regenerative education program include connecting participants with mentors and elders who can support them as they transition into adulthood. The regenerative education program can also include rites of passage and Nature experiences that are facilitated to support the identification of individual gifts and talents and a grounding in Nature. As participants begin to understand their place in the world and work towards self-actualization,

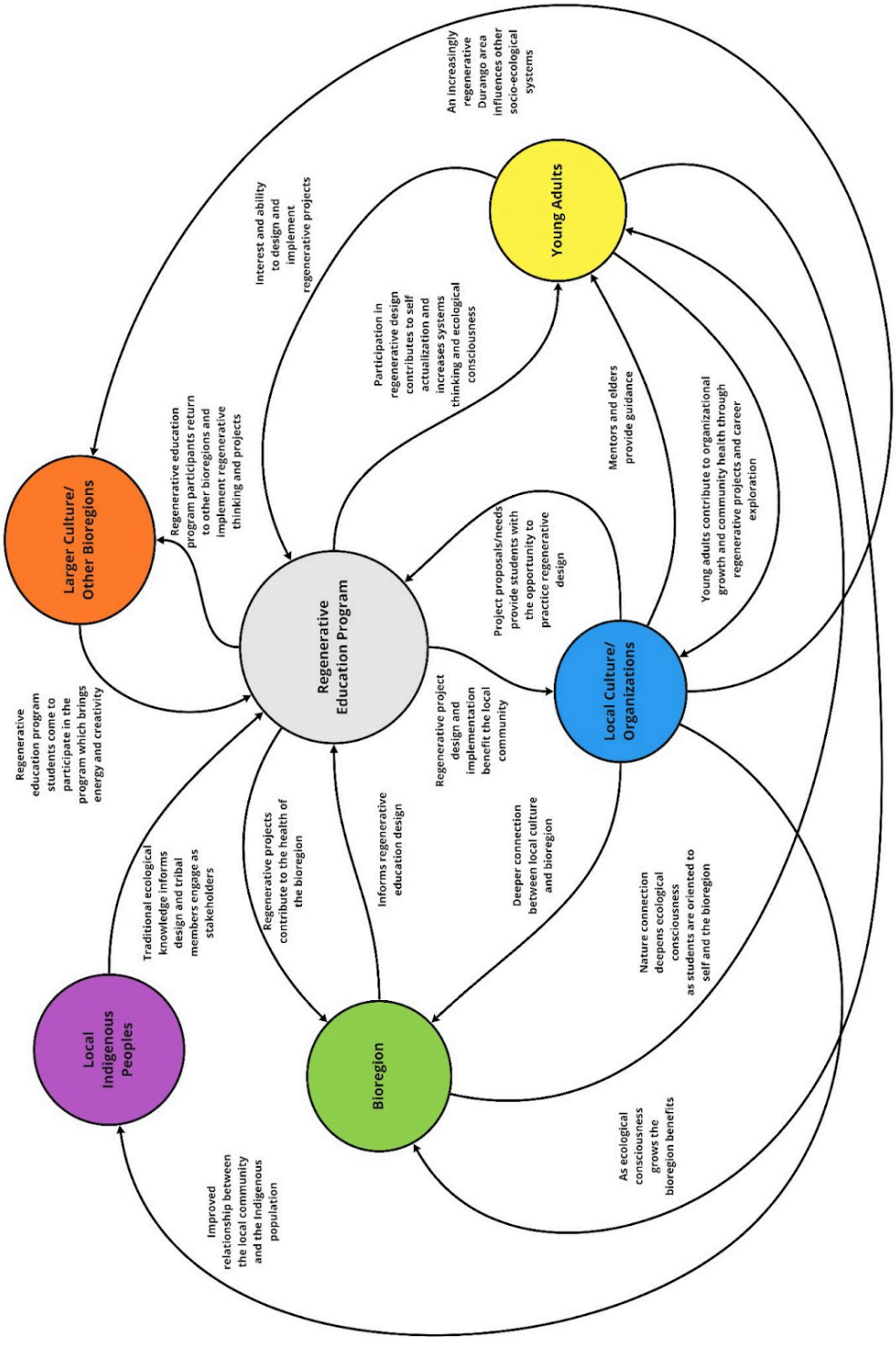
the foundation for them to fully embrace regenerative development and design project work is created. Participants can then live into these emerging gifts and talents through ongoing student-initiated regenerative projects and internships with stakeholder organizations that generate an ongoing cycle of reciprocity between inner health and socio-ecological system health.

Potential Emergent Relationships From the Introduction of a Regenerative Education Program in the Durango Socio-ecological System

Figure 24 offers a systems map indicating the effects that introducing a regenerative education program may have on specific aspects of the Durango socio-ecological system based on the findings of this study. These effects include strengthening and shifting the relationships between the bioregion, the local community members, and young adults. This more densely connected system could offer various benefits across multiple scales, building systems thinking skills, ecological consciousness, and reconnecting individuals, communities, and Nature.

Figure 24

Potential Connections From the Introduction of a Regenerative Education Program in Durango, CO



Future Research

Regenerative Methodology and Socio-ecological Systems

This research study piloted the application of regenerative development and design principles to assess the needs and opportunities of Durango, Colorado's, socio-ecological system and the potential benefits of implementing a regenerative education program. The study focused on three scales within the socio-ecological system, which included key informants (community), bioregional observations (Nature), and young adults (self). In addition, this design approach aimed to assess the ability of regenerative development and design principles to provide a framework for designing an educational approach that is place-informed.

The findings from this study shed light on the design of a regenerative education program specific to Durango and offer the foundations of a framework for applying regenerative development and design principles to a wide range of regenerative projects within socio-ecological systems. The findings from this study also have implications for several areas of research within the field of sustainability education and lay the foundation for future studies that could further explore the use of the regenerative methodology and the application of regenerative development and design principles within a research setting.

Further areas for research include adapting the regenerative methodology used in this dissertation to design a regenerative education program specific to Durango's socio-ecological system and adapting it to a wide range of regenerative projects in other socio-ecological systems. Further research could also extend the regenerative methodology applied in this dissertation with the work of Gibbons et al. (2020). These researchers developed the Regenerative Development Evaluation Tool to assess a given system's relative regenerative state. This tool could be used as a pre-and post-assessment combined with a regenerative development and design intervention

within a socio-ecological system. Another area for further research could be combining the regenerative methodology used in this dissertation with the field of network mapping and network weaving (Holley, 2005). Lastly, the research approach used in this dissertation could be applied in longitudinal studies where biological and cultural data were collected over an extended period using a wide range of additional qualitative and quantitative data collection strategies. This approach could assess the long-term effects of the strategies utilized in this dissertation.

Adapting the Regenerative Socio-ecological Systems Framework to Socio-ecological Systems Research

While the socio-ecological systems framework has been well established within the literature for recognizing the intersection of cultural and ecological systems and has been applied to the study of the resilience and management of these systems, this framework has fallen short in its ability to improve the sustainability of these systems (de Vos et al., 2019; Fischer et al., 2015; Herrero-Jáuregui et al., 2018; Partelow, 2018). The research agenda in the socio-ecological systems framework field has focused on two primary aims, to better understand the underlying structures of these systems and to develop the capacity to encourage these systems toward greater alignment with sustainability goals (Partelow, 2018). Socio-ecological researchers have also struggled to create a framework that can be adapted to meet the sustainability needs of specific places.

This dissertation study linked the socio-ecological framework with regenerative development and design to create a research strategy that is adaptable to place. Regenerative development and design principles seek to elicit the essence and uniqueness of specific socio-ecological systems and recognize the interface between individuals, communities, and Nature.

The approach used in this dissertation study could be adapted and applied to a wide range of socio-ecological studies by mapping the regenerative development and design principles to various data collection methods. I refer to this research approach as the Regenerative Socio-ecological Systems Framework. The Regenerative Socio-ecological Systems Framework could be used to apply a regenerative development and design system intervention could be generated for that specific socio-ecological system, similar to the regenerative education program intervention in this study. These regenerative development and design system interventions could vary widely based on the desired outcomes of the research and the specifics of the socio-ecological system being studied.

Extending the Regenerative Socio-ecological Systems Framework Using The Regenerative Development Evaluation Tool

The research presented in this dissertation could be coupled with the work of researchers at Arizona State University, who recently developed a tool that was specifically designed to evaluate regenerative design projects based on a number of regenerative indicators. The researchers identified that to this point, "neither ecological nor sustainability indicators have successfully integrated necessary aspects of thriving social-ecological systems" (Gibbons et al., 2020, p. 1). Gibbons et al. (2020) also drew on the work of du Plessis and Brandon (2015), who posit that cultivating regenerative socio-ecological systems should be the primary focus of sustainability. Such influences led these researchers to formulate the Regenerative Development Evaluation Tool.

The Regenerative Development Evaluation Tool was designed to evaluate the overall regenerative capacity of social-ecological system designs. The evaluation tool was based on a literature review that identified three meta-principles of regenerative systems; wholeness,

change, and relationship (Gibbons et al., 2020). In addition, the researchers identified seven regenerative design principles that fall into the three meta-principles and four categories of regenerative living systems characteristics that can be used as indicators of regenerative designs and thriving living systems.

Gibbons et al. (2020) designed The Regenerative Development Evaluation Tool to be a qualitative evaluation tool to guide thinking and action and to be adapted to a wide range of regenerative design initiatives. The researchers found the Regenerative Development Evaluation Tool helpful in evaluating two case studies involving urban watershed restoration projects. However, the researchers suggested further development of the evaluation tool to expand and refine its ability to be useful in developing and evaluating the overall regenerative capacity of a socio-ecological system. Areas for further research included using the Regenerative Development Evaluation Tool in the development and implementation of regenerative designs in addition to being used as an evaluation tool post-design. They also suggested the development of qualitative and quantitative indicators specific to place and the development of cross-scale indicators of regenerative socio-ecological systems (Gibbons et al., 2020).

Based on the Regenerative Development Evaluation Tool finding by Gibbons et al. (2020), there may be an opportunity to develop indicators that take a place-based approach to measuring multiple scales of a regenerative socio-ecological system. These indicators could include measurement of the inner dimensions of regeneration (shifts toward ecological consciousness, the ecological self, and systems thinking), relationship to Nature (including cultivation of nature-based human development frameworks and traditional ecological knowledge) and shifts in culture through regenerative development and design. In addition, there may be opportunities to use the Regenerative Development Evaluation Tool as an evaluation

prior to applying the Regenerative Socio-ecological Framework established in this dissertation and then again after the implementation of the Regenerative Socio-ecological Framework intervention to assess any changes within the system.

Network Mapping and the Regenerative Socio-ecological Systems Framework

The research approach piloted in this dissertation could be expanded by integrating techniques from the field of network mapping, network weaving, and social network analysis (Borgatti et al., 2009; Krebs & Holley, 2005). Network weaving encourages social networks toward increased adaptability and resilience (Krebs & Holley, 2005). Networks are the underlying structure of complex systems and consist of nodes and the relationships between the nodes. When these relationships are mapped, they reveal patterns in the system. According to Mang and Haggard (2016), applying regenerative development and design principle four, *actualizing stakeholder systems toward co-evolving mutualism*, can begin with mapping the relationship patterns between stakeholders.

A network weaving approach to addressing systemic social change mirrors many concepts from sustainability education, such as distributed leadership, systems thinking, valuing different perspectives, honoring diversity, appreciative inquiry, and engaging in co-creative processes (Holley, 2012). The research presented in this dissertation could be enhanced by applying network mapping and network weaving techniques as suggested in Figure 25 and Figure 26. Figure 25 uses the research participant categories from this dissertation and adds the dimension of connecting lines representing relationships to illustrate what a network map may look like across these scales of a socio-ecological system. The network map presented here does not reflect actual data and is offered only as an example. Figure 26 then overlays the example network map over the nested systems and correlating regenerative development and design

principles that match the final organization system used in this dissertation (Figure 14). The network map adds an extra dimension to this dissertation's Regenerative Socio-ecological Systems Framework. It opens the possibility of bringing in additional strategies from the field of network weaving when considering how the network may work together to create regenerative socio-ecological systems.

Figure 25

Image Showing a Theoretical Network Map that Includes Relationships Between the Bioregion, Organizations, and Individuals in a Socio-ecological System

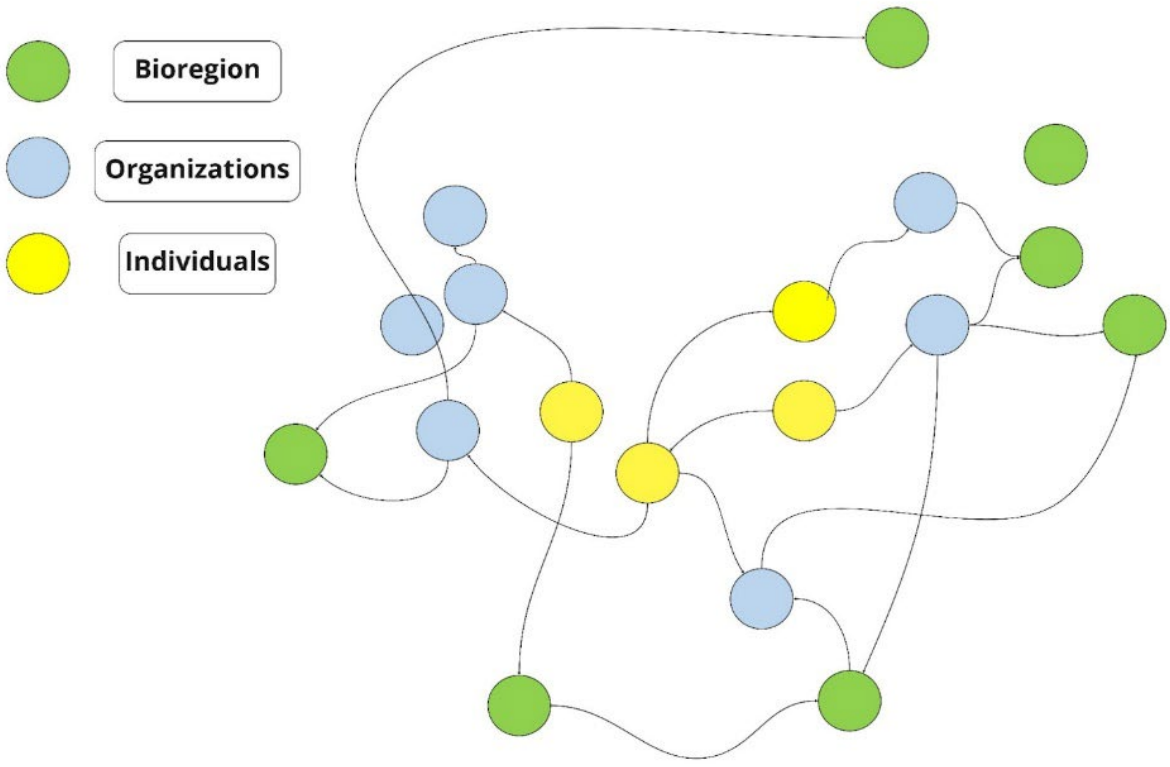
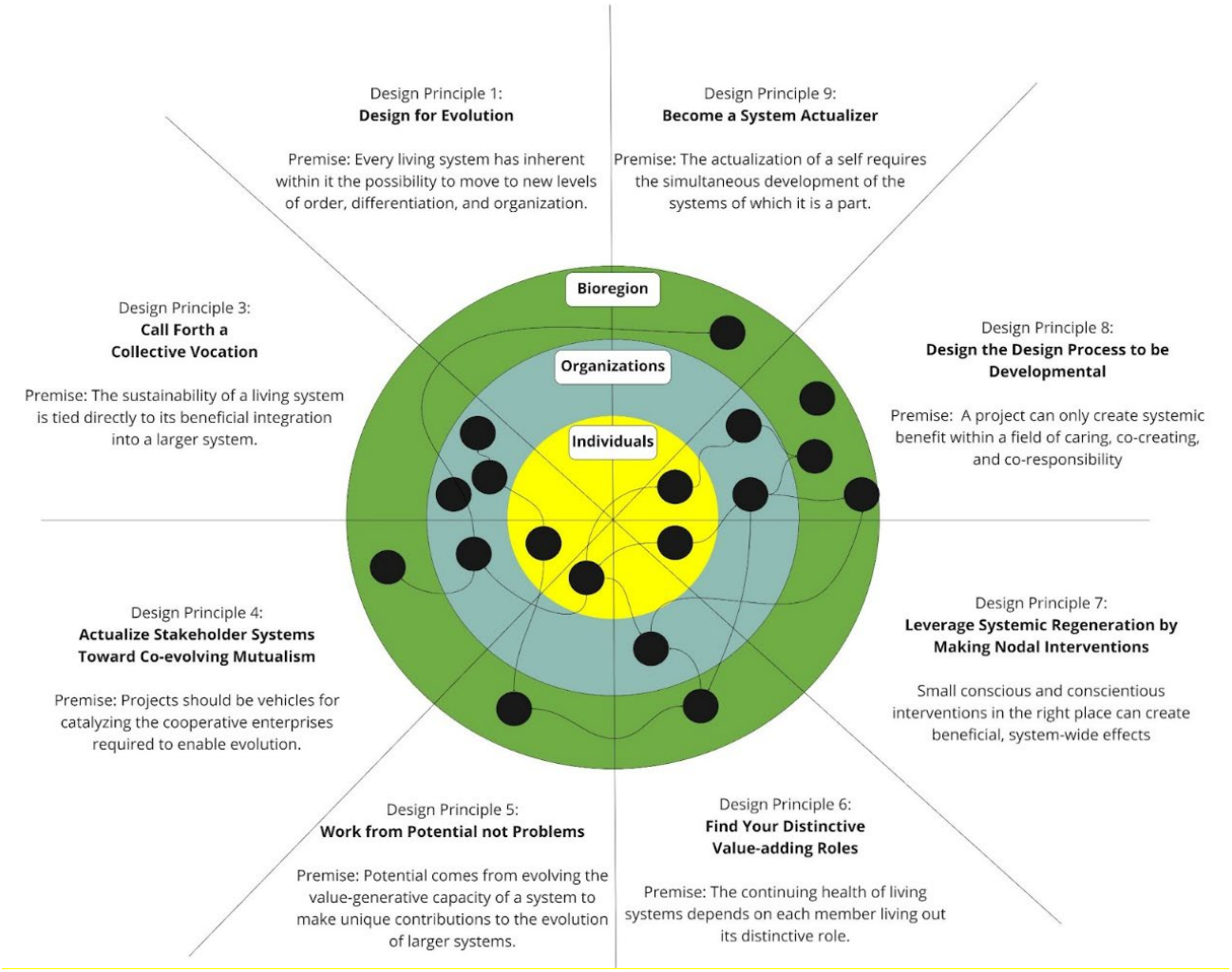


Figure 26

Image Showing a Theoretical Network Map that Includes Relationships Between the Bioregion, Organizations, and Individuals Overlaid on the Regenerative Socio-ecological System Framework Used in This Dissertation



Conclusion

This study was intended to innovate the application of regenerative development and design principles to inform a regenerative education program for young adults that is specific to the unique socio-ecological characteristics of Durango, Colorado. The questions that informed this study were:

1. In what ways do regenerative development and design principles uncover needs and opportunities surfaced by Durango, Colorado's cultural and ecological systems to inform the design of a regenerative education program for young adults?

(a.) What role do young adult education programs play in participant relationships with self, Nature, and culture?

(b.) What role do local bioregional patterns play in designing and implementing a regenerative education program for young adults?

(c.) What needs and opportunities do key informants in the Durango, Colorado area describe within the local ecological and cultural systems to inform the design of a regenerative education program for young adults?

(d.) How might a regenerative education program for young adults support their capacity for personal, ecological, and cultural regeneration?

Inquiry into these questions led to the emergence of eight regenerative development and design principle-aligned multiscale themes. These themes were: 1) Design for Evolution, 2) Convergence, 3) Interdependence, 4) Reintegration, 5) Emergence, 6) Regenerative Education, 7) Co-creation, and 8) Reciprocity. These themes provided insight into various aspects of

Durango's socio-ecological system and provided the foundation for recommendations for the design of a place-informed regenerative education program.

This research study demonstrates the ability of regenerative development and design principles to be applied within the socio-ecological systems research to design a regenerative education program. Furthermore, this research laid the foundation for the formation of the Regenerative Socio-ecological Systems Framework, where data is collected from multiple scales of a socio-ecological system and arranged to align with specific regenerative development and design principle which then produce themes and recommendations for a project team.
This study offered a strategy for gathering data, identifying and connecting with stakeholders, and developing a deeper understanding of place. Given that these are the first steps when designing and implementing any number of regenerative projects, this study revealed an important innovation in the application of the regenerative methodology within a research context.

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Appendix A: Background Information

Kobe Biederman: Kobe is a Ph.D. student at Prescott College in Prescott, AZ. He is in the dissertation phase of a community-based program in Sustainability Education. Kobe earned a Bachelor's Degree in Sociology from the University of Oregon. He earned a Master's Degree in Education from Northern Arizona University as well as a Master's Degree in Recreation Administration from Aurora University. Kobe resides in Durango, Colorado, with his wife and two children. He is the founder and director of The Western Slope Institute and services as the Education Director for Pacific Pathways. He enjoys a small rural college town's lifestyle and takes every opportunity to connect with Nature in this beautiful place.

Problem Statement: Post-secondary sustainability education programs often contain curricular elements for encouraging personal transformation and the development of ecological worldviews. While these educational programs are powerful and can often be life-changing for students, they can lack culturally relevant and viable means for building students' capacity to take action. Students in these programs are asked to critically reflect on their identities, values, attitudes, beliefs, and actions. Yet, they are left with the challenge of devising methods for bringing their newly formed ecological worldviews to life. Programs can lack the necessary program design to facilitate this skill development. These programs may also rely on the local context for their programming but may not have engaged in a deep exploration of the local socio-ecological system in the creation of place-informed programs.

Purpose Statement: The purpose of this research study is to inform the regenerative design of a postsecondary sustainability education program in the Durango, Colorado area. The study will collect ecological and social data in the Durango Colorado area to contextualize the program design. This study will also identify existing postsecondary sustainability education programs that contain elements of sustainability education and community-based projects which will inform the program design.

Research Question: *In what ways do regenerative development and design principles uncover needs and opportunities surfaced by Durango, Colorado's cultural and ecological systems to inform the design of a regenerative education program for young adults?*

Research Significance: The field of sustainability education has emerged as a means of cultivating changes in students' worldviews, establishing paradigms that perceive humans as Nature, and generating systemic shifts towards sustainable culture. While sustainability education provides transformative educational experiences that can lead to the formation of ecological worldviews, there can be a lack of culturally relevant and practical ways for students to apply their ecological worldview to encourage widespread cultural change. This research aims to reveal the needs and opportunities surfaced by key constituents (human and more-than-human) in Durango, Colorado to inform the design of a postsecondary education program.

Appending B: Program Designer Interview Protocols

1. What information do I want to gather, and why?
I want to learn about postsecondary sustainability education program design from the perspective of designers and developers of these types of programs. This data will provide insight into existing program models, processes, and frameworks for cultivating personal and cultural shifts towards sustainability in postsecondary programs. Data collection will include program design facets that help students deepen their ecological worldview as well as data related to helping students build their capacity to facilitate regenerative cultural shifts.

2. Who do I want to collaborate with?
I want to collaborate with designers and developers of postsecondary sustainability education programs that contain community-based praxis elements.

3. What will I do with the information?
I will use the data I collect to inform the regenerative development and design of a postsecondary sustainability education program in the Durango, Colorado area that cultivates ecological consciousness and provides opportunities for students to build capacity for facilitating regenerative cultural change through community-based projects.

4. What is the guiding research question?
What role do young adult education programs play in participant relationships with self, Nature, and culture?

5. Design schedule & timeline
Interview solicitation emails will be sent out during the Fall 2020 semester, pending IRB approval. Interviews will be conducted at the end of the Fall 2020 semester and continue into the Spring 2020 semester. The interviews will be transcribed, organized, coded, analyzed, and synthesized during the Spring 2021 semester. Findings will be presented in a dissertation study.

***S*tep Two: Research/Background/Structure**
- Identify previous research on the topic *(see section 2 of the dissertation proposal)*
- Identify additional research questions *(see section 1 of the dissertation proposal)*

Step Three: IRB Proposal & Consent
- The IRB application will be submitted at the end of the Fall 2020 term.

Step Four: Qualitative Questions
- Decide on the appropriate number of questions *(see Appendix G: Program Designer Interview Questions)*
- Pay attention to the sequence of questions *(see Appendix G: Program Designer Interview Questions)*
- Create open-ended questions *(see Appendix G: Program Designer Interview Questions)*
- Create conditional and plural questions *(see Appendix G: Program Designer Interview Questions)*

- Questions need to be reliable and verifiable *(see Appendix G: Program Designer Interview Questions)*

Step Five: Critical & Cognitive Connections

- Critical/cognitive interviews *(pre-interview connection)*
- Questions before proceeding with the interview *(check)*
- Discussion of the interview process *(check)*
- Discussion about interview questions *(check)*

Step Six: Recording / Notetaking

- Set up a structure for recording *(Zoom videoconference calls will be recorded)*
- Set up a system for notetaking *(Zoom videoconference calls will be recorded)*

Step Seven: Outreach & Communication

- Identify interview participants *(see Appendix D: Program Designer Interview Inclusion Criteria)*
- Send an introduction email with a short message to each participant *(see Appendix E: Program Designer Interview Consent and Questions Email*
- Attach a brief overview of the project and researcher *(see Appendix A: Background Information)*
- Follow up with each potential participant to schedule an interview *(see Appendix E: Program Designer Interview Consent and Questions Email)*
- Send a consent email with a short message to each participant *(see Appendix E: Program Designer Interview Consent and Questions Email)*
- Attach an informed consent form and interview questions *(see Appendix F: Program Designer Interview Informed Consent and Appendix G: Program Designer Interview Questions).*

Step Eight: Interview Call Sequence

- Technical *(mute phone - turn off other devices - get on Zoom early)*
- Presence *(be in a space free of distractions - have interview questions on hand)*
- Opening *(thank you for your time today - exchange intros - cell if tech problems)*
- Notification *(calls have been about 90 minutes - the interview is conversational)*
- After the interview *(a question we did not ask that we should have asked)*
- Follow-up *(copy of the report - OK to email to clarify comments for member check)*

Step Nine: Responses & Analysis

- Transcription - carefully report on the information collected
- Organize and code the raw interview data
- Find like items/patterns/repeating themes

Step Ten: Results & Findings

- Analyze and synthesize the data *(look for emergent themes)*
- Produce a summary of findings

Step Eleven: What's Next / Conclusion

- Follow up with the information collected
- Did the questions produce the information I was looking for?
- Share ideas with participants
- Share report of findings with participants

Appendix C: Program Designer Interview Inclusion Criteria

Program designers must have designed programs that meet the following criteria:

1. Must be 18 years of age or older.
2. They must have designed a postsecondary education program that serves young adults (ages 18-25).
3. Programs must contain one or more of the following elements:
    a) Sustainability education
    b) Regenerative development and design
    c) Permaculture
    d) Ecological design
    e) Nature connection/ Nature-based human development
    f) Cultivation of ecological consciousness
    g) Personal transformation
    h) Culturally relevant means for building students' capacity to affect cultural change
4. Programs must have been in existence for a minimum of five years.
5. Interview participants must represent multiple racial, ethnicity, and gender demographics.
6. Willingness to participate in a recorded video conference call.

Appendix D: Email to Solicit Program Designer Interview Participation

Subject Heading: Doctoral Research Prescott College - Postsecondary Program Designer Interview

Dear [*insert name here*],

My name is Kobe Biederman, and I am a doctoral student in the Sustainability Education department at Prescott College. I am writing to invite you to participate in my doctoral research study. The purpose of the study is to inform the design of a postsecondary sustainability education program in the Durango, Colorado area.

You are eligible to participate in this study because you have been identified as the designer of a postsecondary education program. Your experience will be invaluable for this research study. If you decide to participate in this study, you will be asked to take part in an interview. The interview will be conducted on a Zoom video conference call. Generally, interviews last about 60 minutes. Please read the attached *Background Information* document to learn more about the research project.

I am happy to answer any questions you may have to help you make an informed decision. If you agree to participate, I will send you an email to schedule the interview. The email will also contain an attached consent form and the interview questions for you to review.

Thank you for your time and consideration. I will follow up in a few days to check in and hopefully schedule our interview.

Sincerely,

Kobe Biederman

Ph.D. Graduate Student
Prescott College
Sustainability Education
Email: kobe.biederman@student.prescott.edu
Tel: 603. 547. 5449

Appendix E: Program Designer Interview Consent and Questions Email

Subject Heading: Doctoral Research - Program Designer Interview Consent and Questions

Dear [*insert name here*],

Thank you for agreeing to participate in an interview scheduled for *Day, Date, and Time.* The Zoom call invite will be sent to this same email address directly following this email.

The attached *Program Designer Interview Informed Consent* form provides more detail about the project and your participation. Remember, your participation is entirely voluntary. This research study will include a video recording of your interview. Interview responses will be attributed to you and cited as such should you choose this option on the informed consent form. You will be provided the opportunity to review the transcripts from the interview and redact any statements you do not want used in the study. You will also be provided a copy of the analysis of the interviews prior to publishing to ensure you are accurately represented, a process called member checking. Please review the form to be sure you are comfortable taking part in this interview. Please return your signed consent form before the scheduled interview. I have also attached the *Program Designer Interview Questions* for your review.

These interviews tend to be more conversational and fluid. Generally, the interview can be completed in 60 minutes. I am looking forward to your participation.

Warm regards,

Kobe Biederman

Ph.D. Graduate Student
Prescott College
Sustainability Education
Email: kobe.biederman@student.prescott.edu
Tel: 603. 547. 5449

Appendix F: Program Designer Interview Informed Consent

Introduction
You are invited to take part in a research study. The information in this form is provided to help you decide whether or not to take part. Study personnel will be available to answer your questions and provide additional information. If you choose to participate in the study, you will be asked to sign this consent form. A copy of this form will be given to you for your records.

What is the purpose of this research study?
As part of my doctoral research, I am gathering data to inform the regenerative development and design of a postsecondary sustainability education program in the Durango, Colorado area. This study will identify postsecondary sustainability education programs that contain elements of sustainability education and community-based projects. The study will collect data on these existing programs to inform the program design in the Durango, Colorado area.

Why are you being asked to participate in this study?
You are eligible to participate in this study because you have been identified as a designer and developer of a postsecondary sustainability education program. Your experience will be invaluable for this research study.

How many people will be asked to participate in this study?
Approximately five to eight postsecondary sustainability education program designers and developers will be asked to participate in the study.

What will happen during this study?
The student will provide an interview invite email, background information, a consent email, this consent form, and the research study interview questions for participants to review before the interview. Subsequently, the student will conduct interviews and then follow up with participants to invite them to indicate their desire to receive a copy of the interview transcript prior to publishing, receive a copy of the study findings prior to publishing, and receive updates on the study's status which will include notification of the study completion, and availability of the scientific results of the study.

How long will I be in this study?
The video conference call interview is estimated to take 60 minutes. There is a potential for participants to be on the call beyond the 60 minutes if they so choose. During the spring and summer of 2021, the data coding will occur, at which time a transcript profile will be shared with you for member checking.

Are there any risks to me?
The study will produce a minimal risk to you. You will be asked to represent your organization and express your thoughts and experiences in the design of a postsecondary education program. You may stop participation at any time during the study.

Are there any benefits for me?

1. Potential benefits from the study will be through participation and may provide insights about your program as you reflect on your experiences.

1. Potential broader benefits of the study may be that it positively informs your thinking related to postsecondary educational program design and may also influence the design and development of a new program in the Durango, Colorado area.

Will there be any costs for me?
Aside from your time, there are no financial costs for taking part in the study.

Will I be paid to participate in the study?
No monetary compensation will be offered to participants.

Will video or audio recordings be made of me during the study?
Yes, the interview will include audio and video recording. Recordings will be transcribed, organized, analyzed, synthesized, and reported in the dissertation. Data will be stored on a flash drive, audio or video recordings will be stored on a flash drive, and the data and video recordings will be destroyed at the conclusion of the dissertation.

Will the information that is obtained from me be kept confidential?
Interview participants will be cited and credited in the dissertation study based on transcripts of the video and audio recordings of the interview. If a participant has any concern with respect to confidentiality, the student would be more than willing to field questions and share relevant information.

May I change my mind about participating?
Your participation in this study is voluntary. You may decide not to begin or to stop the study at any time. Any new information discovered about the research will be provided to you. This information could affect your willingness to continue your participation.

What will happen after the study?
The information collected through this research study will be organized and categorized to capture relevant data. The data will inform the students' Ph.D. dissertation work and the design of a postsecondary sustainability educational program in the Durango, Colorado area.

Who can I contact for additional information?
You can obtain further information about the research or voice concerns or complaints about the research by speaking directly with me, Kobe Biederman (Ph.D. student), at 603 547 5449. If you have questions concerning your rights as a research participant, have general questions, concerns, or complaints or would like to give input about the research and can't reach the researcher, or want to talk to someone other than the researcher, you may email Dr. Emily Affolter at, eaffolter@prescott.edu). If you would like to contact the Human Subjects Committee Chairperson by email, please use the following email address: gretchen.gano@prescott.edu.

My signature conveys acceptance as a whole:
By signing this form, I affirm that I have read the information contained in the form, that the researchers have explained the purpose, procedures, possible risks, or benefits to me, that my questions have been answered, and that I agree to take part in this research project survey and associated community workshop. I do not give up any of my legal rights by signing this form.

Please select and initial next to one of the following options to indicate your agreement:

Option 1

_____ I agree to participate in this research, and

- give permission for the textual, visual, and auditory recording of my interview;
- give permission for the use of my contributions to be used for the good of the research;
- share my intellectual property interest and copyright in all ideas that arise during this research so that the researcher may publish these
- give my permission for the use of my name and institution or organization which will be credited and associated with this research
- I waive the desire for anonymity and confidentiality

OR

Option 2

_____ I agree to participate in this research, and

- give permission for the textual, visual, and auditory recording of my interview;
- give permission for the use of my contributions to be used for the good of the research;
- share my intellectual property interest and copyright in all ideas that arise during this research so that the researcher may publish these
- Do not give permission for the use of my name or other identifiers and request to have my identity kept confidential and anonymous.

A copy of the interview transcript will be provided to me before publication. I agree to respond within five business days via email with any corrections or amendments to quotations directly attributed to me.

Your signature:
By signing this form, I affirm that I have read the information contained in the form, that the study has been explained to me, that my questions have been answered and that I agree to take part in this study. I do not give up any of my legal rights by signing this form.

_____ Name (Printed)
_____ Participant's Signature
_____ Date signed

Statement by the person obtaining consent:

I certify that I have explained the research study to the person who has agreed to participate and that they have been informed of the purpose, the procedures, the possible risks, and potential benefits associated with participation in this study. Any questions raised have been answered to the participant's satisfaction.

_____ Name of Study Personnel (Printed)
_____ Study Personnel Signature
_____ Date Signed

Appendix G: Program Designer Interview Questions

Primary Research Question:
In what ways do regenerative development and design principles uncover needs and opportunities surfaced by Durango, Colorado's cultural and ecological systems to inform the design of a regenerative education program for young adults?

Sub Research Question for This Data Collection Method:
What role do postsecondary education programs play in participant relationships with self, Nature, and culture?

Framework for Participants:
My research focuses on the design and development of a postsecondary regenerative education program for young adults specific to the Durango, Colorado area. Regenerative education goes beyond the concept of sustainability, where no additional harm is caused, and aims to build the capacity of individuals and cultures to renew, restore, and revitalize their ability to be thriving and resilient systems.

The purpose of these interviews is to provide insights into the role postsecondary education programs play in participant relationships with self, Nature, and culture.

I would like to remind you that your participation in this study is completely voluntary, and you may choose to withdraw from the study at any time. Please remember that by participating in the study you have agreed to have this interview video recorded and transcribed. Please also remember that if you chose the option to waive the desire for anonymity and confidentiality on the informed consent form that relevant information will be cited in the research findings and attributed to you and your organization. You will be provided with a copy of the transcript and given an opportunity to redact any text you do not want used in the study prior to publishing.

Your participation may provide insights about your program as you reflect on your experiences. Your participation may also influence the design and development of a new program in the Durango, Colorado area. Interviews will last approximately 60 minutes and are meant to be semi-structured and have a conversational tone. Please remember if you have any additional questions or concerns about this study, you are welcome to directly contact Dr. Emily Affolter at, eaffolter@prescott.edu). If you would like to contact the Human Subjects Committee Chairperson by email, please use the following email address: gretchen.gano@prescott.edu.

Questions:

3. Can you share the story of your inspiration to create a program for young adults?

4. What is your program designed to address either for participants or society as a whole?

5. Can you share some of the approaches you have incorporated into your program for facilitating a connection between the participants and Nature?

6. Can you share some of the approaches you have incorporated into your program for facilitating a connection between the participants and their local community?

7. Can you describe the ways in which your program affects participants?

8. What unexpected outcomes have you experienced as a result of your program?

9. What insights have you gained from developing this program that you feel would be important to share with another program designer?

10. What is the funding structure of your program and what advice would you give in this area to another program designer?

Appendix H: Thank You Email for Program Designer Interview Participation

Subject Heading: Doctoral Research - Program Designer Interview Thank You

Dear [*insert name here*],

On behalf of Prescott College, I want to thank you sincerely for your completed participation in the postsecondary educational program founder interview.

You represented one of approximately four postsecondary program designers who participated in the study. It is only with help from volunteers like you that we can perform the essential research necessary to find new and effective methods for encouraging systemic cultural shifts towards sustainability.

I realize that participation in this study was time-consuming and may have asked a lot of you. I value the time you committed to my research efforts. Your contributions were essential to informing the design of a postsecondary sustainability education program in the Durango, Colorado area.

If you wish to receive information about the study in the future, I invite you to respond to this email. Please indicate your desire to receive a copy of the interview transcript prior to publishing, a copy of the study findings prior to publishing, and your interest in being added to a list of participants who will receive updates on the study's status which will include notification of the study completion, and availability of the scientific results of the study.

Thank you very much again for your participation and your contribution to social and educational science.

Sincerely,

Kobe Biederman
Ph.D. Graduate Student
Prescott College
Sustainability Education
Email: kobe.biederman@student.prescott.edu
Tel: 603. 547. 5449

Appendix I: Bioregional Observation Protocols

Step One: Purpose & Design

1. What information do I want to gather, and why?
I want to develop a deeper understanding of the ecological system in the greater Durango, Colorado area. By engaging in a bioregional observation process, I will gather data related to regenerative design principle number two, *Partner With Place*, specifically the ecological system. This data collection process will help elucidate the following:

- What bioregional patterns exist?
- How can these patterns inform the design of a postsecondary education program?
- What sort of experiences do I want the students to have, where would we go, what we do there and why?
- What needs exist and where are the opportunities for the students to contribute to the regeneration of the local socio-ecological system (enhance resilience and regeneration)?

2. Whom do I want to reach?
These bioregional observations view place as a research partner. My aim is to engage in a bioregional exploration through participant observation to deepen my understanding of how the ecological system can inform the postsecondary education program design.

3. What will I do with the information?
I will use the data I collect from this method to inform the regenerative development and design of a postsecondary education program specific to the Durango, Colorado area.

4. What is the guiding research question?
What role do local bioregional patterns play in designing and implementing a regenerative education program for young adults?

5. Design Schedule & Timeline
Bioregional observation data will be collected on an ongoing basis beginning during the Spring 2021 semester and running through the end of the Fall 2021 semester.

Step Two - Research / Background / Structure

- Identify previous research on the topic *(check)*
- Identify additional research questions *(see Chapter 1 of the Dissertation)*

Step Three: IRB Proposal & Consent

- The IRB application will be submitted at the end of the Fall 2020 semester.

Step Four: Outreach & Communication

- Identify strategies and procedures to collect relevant bioregional observation data *(see step five)*
- Ask for consent from the ecosystem before beginning data collection and observations *(see step five))*

Step Five: Specific Observations

- Direct participant observations will take place in the two major bioregions that interface with the Durango area.

- Direct participation and observation through reflective journaling

- Participant observations will begin by walking around a selected area in either the high, medium, or low elevation within the Animas Valley Watershed until I am called to a particular spot to sit down and begin the observation.

- Next, I will spend 10–15-minutes engaged in breathing/focused meditation to calm the mind and heart, become centered, and focused on being present.

- Participant observations will then last for 30-40 minutes including description of a place's ecological characteristics such as vegetation communities, common species, habitat variety and quality, signs and sounds of fauna, landscape type, geological features, drainage patterns and features, seasonal weather impacts, and notable Indigenous cultural interactions.

- Participant observations will also include recording feelings, thoughts, and emotions elicited by the ecosystem.

- Participant observations will conclude with ecology inspired art/regenerative design prototypes that attempt to represent the emergent patterns of the bioregion.

Step Six: Responses & Analysis

- Review reflective journal entries and conduct inductive coding
- Review artistic regenerative designs and conduct inductive coding
- Review biogeography, bioregional maps, and conduct inductive coding

Step Seven: Results & Findings

- Analyze and synthesize the data (look for emergent themes)
- Produce a summary of findings
- Include findings in the dissertation

Step Eight: What's Next / Conclusion

- Did the observations produce the information I was looking for?

Appendix J: Key Informants Focus Group Protocols

Step One: Purpose & Design

1. What information do I want to gather, and why?
I want to identify opportunities in the Durango Colorado community to support the design of a postsecondary regenerative education program.

2. Who do I want to reach?
People who represent key institutions and organizations that can act as community partners in designing and implementing a postsecondary regenerative education program in the Durango, Colorado area.

3. What will I do with the information?
I will look for emerging patterns in the data and look to distill a collective vocation and actualize stakeholder systems toward co-evolving mutualism by identifying opportunities in the Durango Colorado area to support the design of a postsecondary sustainability education program.

4. What is the guiding research question?
What needs and opportunities do key informants in the Durango, Colorado area describe within the local ecological and cultural systems to inform the design of a regenerative education program for young adults?

5. Design Schedule & Timeline!
This data will be collected during the Spring 2021 semester.

Step Two - Research / Background / Structure
- Identify previous research on the topic *(check)*
- Identify additional research questions *(see Chapter 1 of the Dissertation)*

Step Three: IRB Proposal & Consent
- The IRB application will be submitted by the end of the fall 2020 term.

Step Four: Qualitative Questions
- Decide on the appropriate number of questions *(see Appendix O: Key Informant Focus Group Questions)*
- Pay attention to the sequence of questions *(check)*
- Create open-ended questions *(check)*
- Create conditional and plural questions *(check)*
- Questions need to be reliable and verifiable *(see Appendix O: Key Informant Focus Group Questions)*

Step Five: Critical & Cognitive Connections
- Critical/cognitive focus groups (*pre-focus group connection*)
- Questions before proceeding with focus group
- Discussion of focus group process

Step Six: Recording / Notetaking

- Set up a structure for recording *(Zoom videoconference calls will be recorded)*
- Set up a system for notetaking *(Zoom videoconference calls will be recorded/ phone calls will be audio recorded)*

Step Seven: Outreach & Communication

- Create a set of inclusion criteria for focus group participants *(see Appendix K: Key Informant Focus Group Inclusion Criteria)*
- Send an introduction email with a short message to each participant *(see Appendix L: Email to Solicit Participation in Key Informant Focus Group)*
- Attach a brief overview of the project and researcher *(see Appendix A: Background Information)*
- Send a consent email with a short message to each participant *Appendix M: Key Informant Focus Group Consent and Questions Email)*
- Follow up with each potential participant to schedule the focus group

Step Eight: Focus Group Call Sequence

- Technical (mute phone - turn off other devices - get on zoom early)
- Presence (be in a space free of distractions - have focus group questions on hand)
- Opening (thank you for your time today - exchange intros - cell if tech problems)
- Notification (the focus group will last approximately 90 min - focus group is conversational)

Step Nine: Responses & Analysis

- Transcription - carefully report on the information collected
- Organize and code the raw interview data
- Find like items/patterns/repeating themes

Step Ten: Results & Findings

- Analyze and synthesize the data *(look for emergent themes)*
- Conduct a member check by sharing emergent themes and dialogue with at least one focus group member.
- Include synthesis and findings in the dissertation.

Step Eleven: What's Next / Conclusion

- Follow up with the information collected
- Did the questions produce the information I was looking for?

Appendix K: Key Informants Focus Group Inclusion Criteria

Key informant focus group participants must meet the following criteria:

1. Key informant focus group participants must be 18 or over.

2. Represent an institution or organization that is located within La Plata County, Colorado.

3. Represent an institution or organization that includes at least one of the following elements:

    a) Sustainability
    b) Regenerative design and development
    c) Nature connection/Nature-based human development
    d) Cultivation of ecological consciousness
    e) Community resilience
    f) Nature preservation
    g) Personal transformation
    h) Culturally relevant means for building students' capacity to affect cultural change
    i) Protection of wildlands and/or Indigenous sacred sites
    j) Anti-racism, solidarity, or BIPOC activism
    k) Just transition and economic reparations
    l) Cultural programs that promote active decolonization and or Indigenous cultural resurgence

4. They are composed to be reflective of the demographics represented in the greater Durango, Colorado area.

5. The group will consist of 3-5 people.

Appendix L: Email to Solicit Participation in Key Informant Focus Group

Subject Heading: Doctoral Research - Sustainability Education- Participation in Key Informant Focus Group

Dear [*insert name here*],

My name is Kobe Biederman, and I am a doctoral student in the Sustainability Education department at Prescott College. I reside in Durango, Colorado, with my wife and two children. I am the founder and director of The Western Slope Institute, and I am writing to invite you to participate in my dissertation research study.

You are eligible to participate in this study because you are a representative of a La Plata County institution or organization that could contribute to identifying potential community partners and student project sites for a postsecondary sustainability education program in the Durango, Colorado area. Your experience will be invaluable for this research study. If you decide to participate in this study, you will be asked to participate in a focus group with other local key informants.

The focus group will meet one time to identify community assets and local resources. The focus group will be conducted on a Zoom video conference call and last approximately 60 minutes. Please read the attached *Background Information* document to learn more about the research project.

I will be happy to answer any questions you may have to help you make a more informed decision. If you agree to participate, I will send you an email to schedule the focus group. The email will also contain an attached informed consent form and the focus group questions for you to review in advance.

Thank you for your time and consideration. I will follow up in a few days to hopefully add you to our focus group.

Sincerely,

Kobe Biederman
Ph.D. Graduate Student
Prescott College
Sustainability Education
Email: kobe.biederman@student.prescott.edu
Tel: 603. 547. 5449

Appendix M: Key Informant Focus Group Consent and Questions Email

Subject Heading: Doctoral Research - Key Informant Focus Group Consent and Questions

Dear [*insert name here*],

Thank you for agreeing to participate in a focus group of local key informants!
I am working on gathering availability from other potential participants. As more participants respond I will start to schedule the focus groups. If there are days of the week and times of the day that work best for you, please let me know and I will try to group you with other participants that have similar schedules. I will also give you a minimum of two weeks' notice for the scheduled focus group to allow you to plan accordingly.

The attached Key Informant Focus Group Informed Consent form provides more detail about the project and your participation. Remember, your participation is entirely voluntary. This research study will include a video recording and transcription of the focus group. Focus group responses will be attributed to you and cited as such should you choose this option on the informed consent form. You will be provided the opportunity to review the transcripts from the focus group and redact any statements you do not want used in the study.

You will also be given the opportunity to be provided a copy of the analysis of the focus group prior to publishing to ensure you are accurately represented, a process called member checking. Please return your signed consent form before the scheduled focus group. I have also attached the Key Informant Focus Group Questions for your review.

The focus group will be conversational and fluid and should be completed in about 60 minutes. I am looking forward to your participation!

Warm regards,

Kobe Biederman

Ph.D. Graduate Student
Prescott College
Sustainability Education
Email: kobe.biederman@student.prescott.edu
Tel: 603. 547. 5449

Appendix N: Key Informant Focus Group Informed Consent

Introduction
You are invited to take part in a research study. The information in this form is provided to help you decide whether or not to take part. Study personnel will be available to answer your questions and provide additional information. If you choose to participate in the study, you will be asked to sign this consent form. A copy of this form will be given to you for your records.

What is the purpose of this research study?
As part of my doctoral research, I am gathering data to inform the regenerative development and design of a postsecondary regenerative education program in the Durango, Colorado area. This study includes collecting data related to identifying potential community partners to support the design and implementation of a postsecondary regenerative education program.

Why are you being asked to participate in this study?
You are eligible to participate in this study because you have been identified as a representative of a La Plata County institution or organization that could help create an asset map of potential community partners and student project sites for a postsecondary education program in the Durango, Colorado area. Your experience will be invaluable for this research study.

How many people will be asked to participate in this study?
Approximately three to five key informants will be asked to participate in the focus group.

What will happen during this study?
The student will provide a focus group invite email, background information, a consent email, this consent form, and the research study focus group questions for participants to review before the focus group. Subsequently, the student will conduct the focus group and then follow up with participants to invite them to indicate their desire to receive a copy of the focus group transcript prior to publishing, receive a copy of the study findings prior to publishing, and receive updates on the study's status which will include notification of the study completion, and availability of the scientific results of the study.

How long will I be in this study?
The video conference call focus group is estimated to take 60 minutes. There is a potential for participants to be on the call beyond the 60 minutes if they so choose. During the spring and summer of 2021, the data coding will occur, at which time a transcript profile may be shared with you for member checking.

Are there any risks to me?
The study will produce a minimal risk to you. You will be asked to represent your organization and express your thoughts and experiences related to identifying potential community assets and partnerships to support a postsecondary sustainability education program. You may stop participation at any time during the study.

Are there any benefits for me?

1. Potential benefits from the study will be through participation and may provide new community connections and strengthen your local network in the Durango, Colorado area.

2. Potential broader benefits of the study may be that it positively supports sustainability in La Plata County and increases your institution or organization's effectiveness or meets your organization's needs in some way.

Will there be any costs for me?
Aside from your time, there are no financial costs for taking part in the study.

Will I be paid to participate in the study?
No monetary compensation will be offered to participants.

Will video or audio recordings be made of me during the study?
Yes, the focus group will include audio and video recording. Recordings will be transcribed, organized, analyzed, synthesized, and reported in the dissertation. Data will be stored on a flash drive, audio or video recording will be stored on a flash drive, and the data and video recordings will be destroyed after the dissertation.

Will the information that is obtained from me be kept confidential?
Focus group participants or the focus group will be cited and credited in the dissertation study based on transcripts of the focus group's video and audio recordings. If a participant has any concern concerning confidentiality, the student would be more than willing to field questions and share relevant information.

May I change my mind about participating?
Your participation in this study is voluntary. You may decide not to begin or to stop the study at any time. Any new information discovered about the research will be provided to you. This information could affect your willingness to continue your participation.

What will happen after the study?
The information collected through this research study will be organized and categorized to capture relevant data. The data will inform the student's Ph.D. dissertation work and the design of a postsecondary sustainability educational program in the Durango, Colorado area.

Who can I contact for additional information?
You can obtain further information about the research or voice concerns or complaints about the research by speaking directly with me, Kobe Biederman (Ph.D. student), at 603 547 5449. If you have questions concerning your rights as a research participant, have general questions, concerns, or complaints or would like to give input about the research and can't reach the researcher, or want to talk to someone other than the researcher, you may email Dr. Emily Affolter at, eaffolter@prescott.edu). If you would like to contact the Human Subjects Committee Chairperson by email, please use the following email address: gretchen.gano@prescott.edu.

My signature conveys acceptance as a whole:
By signing this form, I affirm that I have read the information contained in the form, that the researchers have explained the purpose, procedures, possible risks, or benefits to me, that my questions have been answered, and that I agree to take part in this research project. I do not give up any of my legal rights by signing this form.

Please select and initial next to one of the following options:

Option 1
_____ I agree to participate in this research, and

- give permission for the textual, visual, and auditory recording of my interview;
- give permission for the use of my contributions to be used for the good of the research;
- share my intellectual property interest and copyright in all ideas that arise during this research so that the researcher may publish these
- give my permission for the use of my name and institution or organization which will be credited and associated with this research
- I waive the desire for anonymity and confidentiality

OR

Option 2

_____ I agree to participate in this research, and

- give permission for the textual, visual, and auditory recording of my interview.
- give permission for the use of my contributions to be used for the good of the research;
- share my intellectual property interest and copyright in all ideas that arise during this research so that the researcher may publish these
- Do not give permission for the use of my name or other identifiers and request to have my identity kept confidential and anonymous.

A copy of the focus group transcript will be provided to me before publication. I agree to respond within five business days via email with any corrections or amendments to quotations directly attributed to me.

Your signature:
By signing this form, I affirm that I have read the information contained in the form, that the study has been explained to me, that my questions have been answered and that I agree to take part in this study. I do not give up any of my legal rights by signing this form.

_____ Name (Printed)
_____ Participant's Signature
_____ Date signed

Statement by the person obtaining consent:

I certify that I have explained the research study to the person who has agreed to participate and that they have been informed of the purpose, the procedures, the possible risks, and potential benefits associated with participation in this study. Any questions raised have been answered to the participant's satisfaction.

_____ Name of Study Personnel (Printed)
_____ Study Personnel Signature
_____ Date Signed

Appendix O: Key Informant Focus Group Questions

Primary Research Question:
In what ways do regenerative development and design principles uncover needs and opportunities surfaced by Durango, Colorado's cultural and ecological systems to inform the design of a regenerative education program for young adults?

Sub Research Question for This Data Collection Method:
What needs and opportunities do key informants in the Durango, Colorado area describe within the local ecological and cultural systems to inform the design of a regenerative education program for young adults?

Framework for Participants:
The focus of my research is the design and development of a regenerative education program for young adults that is specific to the Durango, Colorado area. Regenerative education goes beyond the concept of sustainability, where no additional harm is caused and aims to build the capacity of individuals and cultures to renew, restore, and revitalize their ability to be thriving and resilient systems.

The purpose of this focus group is to provide insights into the relationships that key institutions and organizations have with the ecological and cultural systems in the Durango area. I am interested in sense of place and the relationship questions. These relationships can play an important role in informing the design and development of a postsecondary education program that is specific to the Durango, Colorado area.

I would like to remind you that your participation in this study is completely voluntary, and you may choose to withdraw from the study at any time. Please remember that by participating in the study you have agreed to have this interview video recorded and transcribed. Please also remember that if you chose the option to waive the desire for anonymity and confidentiality on the informed consent form that relevant information will be cited in the research findings and attributed to you and your organization. You will be provided with a copy of the transcript and given an opportunity to redact any text you do not want used in the study prior to publishing.

Your participation may provide new community connections and strengthen your local network in the Durango, Colorado area. Your participation may also positively support sustainability in La Plata County and increase your institution or organization's effectiveness or meet your organization's needs in some way.

Focus groups will last approximately 60 minutes and are meant to be semi-structured and have a conversational tone. If you have questions concerning your rights as a research participant, have general questions, concerns, or complaints or would like to give input about the research and can't reach the researcher, or want to talk to someone other than the researcher, you may email Dr. Emily Affolter at, eaffolter@prescott.edu). If you would like to contact the Human Subjects Committee Chairperson by email, please use the following email address: gretchen.gano@prescott.edu.

Questions:

1. If the Durango area were a person, how would you describe this person?

2. How do you develop a sense of place in the Durango area?

3. Can you tell me about a time when you really felt connected to nature in the Durango area?

4. How would you describe the culture of the Durango area?

5. Can you describe your organization's relationship with the natural environment of the Durango area?

6. Can you describe your organization's relationship with the Durango community?

7. I am interested in the design and development of a postsecondary education program for young adults that facilitates personal growth, nature connection, and community sustainability projects. What organizational relationships or networking opportunities exist in the Durango area to support the development of this type of program for young adults?

Appendix P: Thank you Email for Participating in the Key Informant Focus Group

Subject Heading: Doctoral Research - Key Informants Focus Group Thank You

Dear [*insert name here*],

On behalf of Prescott College, I want to thank you sincerely for your completed participation in the key informants focus group.
.
It is only with help from volunteers like you that we can perform the essential research to find new and effective methods for encouraging systemic cultural shifts towards sustainability.

I realize that participation in this study was time-consuming and may have asked a lot of you. I value the time you committed to my research efforts. Your contributions were essential to informing the design of a postsecondary sustainability education program in the Durango, Colorado area.

If you wish to receive information about the study in the future, I invite you to respond to this email. Please indicate your desire to receive a copy of the focus group transcript prior to publishing, a copy of the study findings prior to publishing, and your interest in being added to a list of participants who will receive updates on the study's status which will include notification of the study completion, and availability of the scientific results of the study

Thank you very much again for your participation and your contribution to social and educational science.

Sincerely,

Kobe Biederman
Ph.D. Graduate Student
Prescott College
Sustainability Education
Email: kobe.biederman@student.prescott.edu
Tel: 603. 547. 5449

Appendix Q: Young Adult Interview Protocols

Step One: Purpose & Design

1. What information do I want to gather, and why?
I want to know what design elements of a postsecondary sustainability education program might be necessary to support young adults' capacity to facilitate local cultural and ecological sustainability.

2. Who do I want to reach?
Young adults who live in the Durango, Colorado area and represent potential postsecondary program participants.

3. What will I do with the information?
I will use the data I collect from this method to inform design elements of a postsecondary sustainability education program that could help young adults cultivate ecological consciousness and build the capacity to facilitate local cultural and ecological sustainability.

4. What is the guiding research question?
How might a regenerative education program for young adults support their capacity for personal, ecological, and cultural regeneration?

5. Design Schedule & Timeline
This data will be collected during the Spring 2021 semester.

Step Two - Research / Background / Structure
- Identify previous research on the topic *(check)*
- Identify additional research questions *(see Chapter 1 of the Dissertation)*

Step Three: IRB Proposal & Consent
- The IRB application will be submitted by the end of the fall 2020 term.

Step Four: Qualitative Questions
- Decide on the appropriate number of questions *(see Appendix W: Young Adults Interview Questions)*
- Pay attention to the sequence of questions *(check)*
- Create open-ended questions *(check)*
- Create conditional and plural questions *(check)*
- Questions need to be reliable and verifiable *(see Appendix W: Young Adults Interview Questions)*

Step Five: Critical & Cognitive Connections
- Critical/cognitive interview (*pre interview connection*)
- Questions before proceeding with interviews
- Discussion of interview process

Step Six: Recording / Note-taking

- Set up a structure for recording *(Zoom videoconference calls will be recorded)*
- Set up a system for note-taking *(Zoom videoconference calls will be recorded)*

Step Seven: Outreach & Communication

- Create a set of inclusion criteria for interview participants *(see Appendix R: Young Adult Interview Inclusion Criteria)*
- Send an introduction email with a short message to each participant *(see Appendix U: Email to Solicit Participation in Young Adult Interview)*
- Attach a brief overview of the project and researcher *(see Appendix A: Background Information)*
- Follow up with each potential participant to schedule the interview *(see Appendix S: Young Adult Interview Consent and Questions Email)*
- Send a consent email with a short message to each participant *(Appendix S: Young Adult Interview Consent and Questions Email)*
- Attach an informed consent form and interview questions *(see Appendix S: Young Adult Interview Consent and Questions Email and Appendix W: Young Adult Interview Questions)*

Step Eight: Interview Call Sequence

- Technical (mute phone - turn off other devices - get on zoom early)
- Presence (be in a space free of distractions - have interview questions on hand)
- Opening (thank you for your time today - exchange intros - cell if tech problems, reminder that the videoconference call will be recorded)
- Notification (videoconference will last approximately 90 minutes - interview is conversational)

Step Nine: Responses & Analysis

- Transcription - carefully report on the information collected
- Organize and code the raw interview data
- Find like items/patterns/repeating themes

Step Ten: Results & Findings

- Analyze and synthesize the data *(look for emergent themes)*
- Conduct a member check by sharing emergent themes and dialogue with at least one interview member.
- Include synthesis and findings in the dissertation.

Step Eleven: What's Next / Conclusion

- Follow up with the information collected
- Did the questions produce the information I was looking for?

Appendix R: Young Adult Interview Inclusion Criteria

Interview participants must meet the following criteria:

1. Participants must represent young adults ages 18-25
2. Participants must live in La Plata County, Colorado.
3. The interview will reflect the demographics of the emerging adult population in the larger Durango, Colorado area regarding age, race, ethnicity, and gender.
4. The group will consist of 3-5 people.

Appendix S: Young Adult Interview Consent and Questions Email

Subject Heading: Doctoral Research - Participation in Young Adult Interviews

Dear [*insert name here*],

My name is Kobe Biederman, and I am a doctoral student in the Sustainability Education department at Prescott College. I am writing to invite you to participate in my dissertation research study.

You are eligible to participate in this study because you have been identified as a young adult in La Plata County who is between the 18 and 25 years old.

Your experience will be invaluable for this research study. If you decide to participate in this study, you will be asked to participate in a interview of local young adults. The interview will help inform the design and implementation of a postsecondary regenerative education program. The design of this program will look to build on young adults' capacity to facilitate local cultural and ecological sustainability. The interviews will be conducted on a Zoom video conference call and last approximately 90 minutes. Please read the attached *Background Information* document to learn more about the research project.

Remember, your participation is entirely voluntary. This research study will include a video recording of the interview and identify you in the findings. You will be provided the opportunity to review the transcripts from the interview and redact any statements you do not want used in the study. Interview responses will be attributed to you and cited as such. You will also be provided a copy of the analysis of the interview prior to publishing to ensure you are accurately represented, a process called member checking. Please return your signed consent form before the scheduled interview I have also attached *Young Adult Interview Questions* for your review.

I will be happy to answer any questions you may have to help you make a more informed decision. If you agree to participate, I will send you an email to schedule the interview, with an attached consent form and the interview questions in advance. Thank you for your time and consideration. I will follow up in a few days to hopefully add you to our dynamic interview of young adults.

Sincerely,
Kobe Biederman
Ph.D. Graduate Student
Prescott College
Sustainability Education
Email: kobe.biederman@student.prescott.edu
Tel: 603. 547. 5449

Appendix T: Young Adults Interview Informed Consent

Introduction
You are invited to take part in a research study. The information in this form is provided to help you decide whether to take part. Study personnel will be available to answer your questions and provide additional information. If you choose to participate in the study, you will be asked to sign this consent form. A copy of this form will be given to you for your records.

What is the purpose of this research study?
As part of my doctoral research, I am gathering data to identify potential community partners, opportunities, and assets to inform the regenerative design and development of a postsecondary regenerative education program in the Durango, Colorado area.

Why are you being asked to participate in this study?
You are eligible to participate in this study because you have been identified as a young adult between the ages of 18 and 25 who resides in La Plata County. Your experience will be invaluable for this research study.

How many people will be asked to participate in this study?
Approximately three to five young adults will be asked to participate in the study.

What will happen during this study?
The student will provide an interview invite email containing the consent form, and the research study interview questions for participants to review before the interview. Subsequently, the student will conduct the interview and then follow up with participants to invite them to indicate their desire to receive a copy of the interview transcript prior to publishing, receive a copy of the study findings prior to publishing, and receive updates on the study's status which will include notification of the study completion, and availability of the scientific results of the study.

How long will I be in this study?
The video conference call interview is estimated to take 60 minutes. There is a potential for participants to be on the call beyond the 60 minutes if they so choose. During the fall of 2021, the data coding will occur, at which time a transcript profile may be shared with you for member checking.

Are there any risks to me?
The study will produce a minimal risk to you. You will be asked to express your thoughts and experiences related to being a young adult and the design and implementation of a postsecondary sustainability education program in the Durango, Colorado area. You may stop participation at any time during the study.

Are there any benefits for me?
1. Potential benefits from the study will be through participation and may provide new personal insights, connections, and opportunities for personal growth and engagement in sustainability in the Durango, Colorado area.

1. Potential broader benefits of the study may be that it positively supports sustainability in La Plata County and increases opportunities for young adults to participate in postsecondary education programs that support and nurture their personal development.

Will there be any costs for me?
Aside from your time, there are no financial costs for taking part in the study.

Will I be paid to participate in the study?
No monetary compensation will be offered to participants.

Will video or audio recordings be made of me during the study?
Yes, the interview will include audio and video recording. Recordings will be transcribed, organized, analyzed, synthesized, and reported in the dissertation. Data will be stored on a flash drive, audio or video recording will be stored on a flash drive, and the data and video recordings will be destroyed at the conclusion of the dissertation.

Will the information that is obtained from me be kept confidential?
Interview participants will be cited and credited in the dissertation study based on transcripts of the interview's video and audio recordings. If a participant has any concern about confidentiality, the student would be more than willing to field questions and share relevant information.

May I change my mind about participating?
Your participation in this study is voluntary. You may decide not to begin or to stop the study at any time. Any new information discovered about the research will be provided to you. This information could affect your willingness to continue your participation.

What will happen after the study?
The information collected through this research study will be organized and categorized to capture relevant data. The data will inform the student's Ph.D. dissertation work and the design of a postsecondary regenerative educational program in the Durango, Colorado area.

Who can I contact for additional information?
You can obtain further information about the research or voice concerns or complaints about the research by speaking directly with me, Kobe Biederman (Ph.D. student), at 603 547 5449. If you have questions concerning your rights as a research participant, have general questions, concerns, or complaints or would like to give input about the research and can't reach the researcher, or want to talk to someone other than the researcher, you may email Dr. Emily Affolter at, eaffolter@prescott.edu). If you would like to contact the Human Subjects Committee Chairperson by email, please use the following email address: gretchen.gano@prescott.edu.

My signature conveys acceptance as a whole:
By signing this form, I affirm that I have read the information contained in the form, that the researchers have explained the purpose, procedures, possible risks, or benefits to me, that my

questions have been answered, and that I agree to take part in this research project. I do not give up any of my legal rights by signing this form.

_____ I agree to participate in this research, and

- give permission for the textual, visual, and auditory recording of my interview;
- give permission for the use of my contributions to be used for the good of the research;
- share my intellectual property interest and copyright in all ideas that arise during this research so that the researcher may publish these
- give my permission for the use of my name and institution or organization which will be credited and associated with this research
- I waive the desire for anonymity and confidentiality

OR

_____ I agree to participate in this research, and

- give permission for the textual, visual, and auditory recording of my interview;
- give permission for the use of my contributions to be used for the good of the research;
- share my intellectual property interest and copyright in all ideas that arise during this research so that the researcher may publish these
- Do not give permission for the use of my name or other identifiers and request to have my identity-kept confidential and anonymous.

A copy of the interview transcript will be provided to me before publication. I agree to respond within five business days via email with any corrections or amendments to quotations directly attributed to me.

Your signature:
By signing this form, I affirm that I have read the information contained in the form, that the study has been explained to me, that my questions have been answered and that I agree to take part in this study. I do not give up any of my legal rights by signing this form.

_____ Name (Printed)
_____ Participant's Signature
_____ Date signed

Statement by the person obtaining consent:
I certify that I have explained the research study to the person who has agreed to participate and that they have been informed of the purpose, the procedures, the possible risks, and potential benefits associated with participation in this study. Any questions raised have been answered to the participant's satisfaction.

_____ Name of Study Personnel (Printed)
_____ Study Personnel Signature
_____ Date Signed

Appendix U: Email to Solicit Participation in Young Adult Interviews

Subject Heading: Doctoral Research - Participation in Young Adult Interviews

Dear [*insert name here*],

My name is Kobe Biederman, and I am a doctoral student in the Sustainability Education department at Prescott College. I am writing to invite you to participate in my dissertation research study.

You are eligible to participate in this study because you have been identified as a young adult in La Plata County who is between 18 and 25 years old.

Your experience will be invaluable for this research study. If you decide to participate in this study, you will be asked to participate in a interview of local young adults. The interviews will help inform the design and implementation of an education program for young adults that is focused on nature connection and local resilience. The interview will be conducted via Zoom and last approximately 60- 90 minutes. Please read the attached *Background Information* document to learn more about the research project.

I am happy to answer any questions you may have to help you make an informed decision. If you agree to participate, I will send you an email to schedule the interview. The email will also contain an attached consent form and the interview questions for you to review in advance. Thank you for your time and consideration.

Kobe Biederman

Ph.D. Graduate Student
Prescott College
Sustainability Education
Email: kobe.biederman@student.prescott.edu
Tel: 603. 547. 5449

Appendix V: Young Adult Interview Recruitment Flyer

18–25-Year-Old Participants Needed for Educational Research Study

60 - 90 Minute Zoom Interviews

Lead Researcher: Kobe Biederman

Kobe Biederman and researchers from the Sustainability Education Department at Prescott College are recruiting participants for a research study about the design and development of an education program for young adults focused on personal development, nature connection, and cultural sustainability. This study may help us to better understand how regenerative development and design principles can inform the creation of an education program for young adults in the Durango, Colorado area.

You are eligible to participate in this study if you are between the ages of 18 and 21 and live in La Plata County.

The study will take place remotely using a videoconferencing platform. Your participation will last up to 90 minutes on the day the study is scheduled.

You will be asked to participate in a zoom interview that will consist of a series of questions. The research focuses on the design and development of a regenerative education program for young adults specific to the Durango, Colorado area. Regenerative education goes beyond the concept of sustainability, where no additional harm is caused, and aims to build individuals and cultures' capacity to renew, restore, and revitalize in the face of the climate crisis. The education program design will focus on personal development, nature connection, and the cultivation of regenerative communities.

The purpose of the interview is to provide insights from young adults who represent potential program participants so the program can best meet the needs of people like you. The interview questions center on your perspectives on education, personal development, and your experiences as young adults who live in the Durango area.

You will not be paid for your participation in this research study.

If you are interested in participating in this study, please contact Kobe Biederman at

kobe.biederman@student.prescott.edu.

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Appendix W: Young Adult Interview Questions

Primary Research Question:
In what ways do regenerative development and design principles uncover needs and opportunities surfaced by Durango, Colorado's cultural and ecological systems to inform the design of a regenerative education program for young adults?

Sub Research Question for This Data Collection Method:
How might a regenerative education program for young adults support their capacity for personal, ecological, and cultural regeneration?

Framework:
My research focuses on the design and development of a postsecondary regenerative education program for young adults specific to the Durango, Colorado area. Regenerative education goes beyond the concept of sustainability, where no additional harm is caused and aims to build the capacity of individuals and cultures to renew, restore, and revitalize their ability to be thriving and resilient systems. The postsecondary program I am interested in designing will focus on personal development, Nature connection, and the cultivation of regenerative communities. I am interested in exploring program designs that are meant to educate the whole person.
The purpose of this interview is to provide insights from a group of people who represent the perspective of potential program participants. I am most interested in your views on education, personal development, and your experiences as young adults who live in the Durango area.

I would like to remind you that your participation in this study is completely voluntary, and you may choose to withdraw from the study at any time. Please remember that by participating in the study you have waived your right to anonymity and that this interview will be video recorded and transcribed and that relevant information will be used in the research findings. You will be provided with a copy of the transcript and given an opportunity to redact any text you do not want used in the study.

Your participation may provide new personal insights, connections, and opportunities for personal growth and engagement in sustainability in the Durango, Colorado area. Your participation may also positively support sustainability in La Plata County and increase opportunities for young adults to participate in postsecondary education programs that support and nurture their personal development.

Interviews will last approximately 60 minutes and are meant to be semi-structured and have a conversational tone. If you have questions concerning your rights as a research participant, have general questions, concerns, or complaints or would like to give input about the research and can't reach the researcher, or want to talk to someone other than the researcher, you may email Dr. Emily Affolter at, eaffolter@prescott.edu). If you would like to contact the Human Subjects Committee Chairperson by email, please use the following email address: gretchen.gano@prescott.edu.

Questions:

1. Can you describe a time recently when a learning experience had a significant impact on you?

2. What types of experiences do you feel were absent from your formal education in preparing you to become a young adult?

3. What challenges have you faced while becoming a young adult in the world today?

4. What types of programs or education would help support you as you become a young adult?

5. What types of programs or education do you think would help you develop your existing inner gifts so you could live the life you envision?

6. Can you describe your relationship to the natural world in the Durango area?

7. Can you describe your relationship with the larger community in the Durango area?

8. What needs do you have that an educational program focused on personal development, and relationships with nature and community could address?

Appendix X: Thank You Email for Participating in the Young Adult Interview

Subject Heading: Doctoral Research -Young Adults Interview Thank You

Dear [*insert name here*],

On behalf of Prescott College, I want to thank you sincerely for your completed participation in the young adult interview.

It is only with help from volunteers like you that we can perform the essential research to find new and effective methods for encouraging systemic cultural shifts towards sustainability.

I realize that participation in this study was time-consuming and may have asked a lot of you. I value the time you committed to my research efforts. Your contributions were essential to informing the design of a postsecondary sustainability education program in the Durango, Colorado area.

If you wish to receive information about the study in the future, I invite you to respond to this email. Please indicate your desire to receive a copy of the interview transcript prior to publishing, a copy of the study findings prior to publishing, and your interest in being added to a list of participants who will receive updates on the study's status which will include notification of the study completion, and availability of the scientific results of the study

Thank you very much again for your participation and your contribution to social and educational science.

Sincerely,

Kobe Biederman
Ph.D. Graduate Student
Prescott College
Sustainability Education
Email: kobe.biederman@student.prescott.edu
Tel: 603. 547. 5449

Appendix Y: K.E.Y Logo