

FIVE PRINCIPLES of
DEEPTIME LEARNING
by Jennifer Morgan and Orla Hazra

Deeptime Learning (DTL) connects us to our primal desire to answer fundamental questions: “Where did we come from?” “What are we part of?” “Where are we going?” “What is our role?” “How do we belong?” DTL connects our personal and communal lives to the larger arc of cosmic evolution.

DTL embraces the discovery of an evolving Universe as a stunning development that changes our understanding of the Universe and who/what we are as humans. The mission of education, in DTE, is to reveal the foundational significance of this discovery for our Earth community, humans, and our personal roles inside the larger context of evolution.

DTL recognizes that when a grand narrative of the Universe is infused with the humanities, it becomes a cosmology—an origin story and unifying worldview—for our time, fulfilling the function that creation stories have served for cultures in the past, that of unifying the person with the Cosmos and Earth.

DTL recognizes that a huge and tumultuous shift in perspective for humanity is underway: 1) from seeing the Cosmos as fixed to understanding the Cosmos as evolving, 2) from seeing ourselves as separate from the Universe to understanding and experiencing ourselves as beings of the Universe (the Universe in human form).

DTL embraces the idea that education is less about the accumulation of information — though high quality information is important—and more about exploring a worldview that will aid us in realizing our personal and planetary potential while intentionally engage in evolution to create a vibrant world.

DTL orients us to our largest context, a vast evolving Universe; connects us to our matrix, the Earth; transforms us into our larger identities; and guides our actions.

DTL recognizes the importance—and urgency—of a deep time understanding as the basis for action. A flourishing future for our planet will be more likely if our actions are informed by an understanding of our context, matrix, inner transformation, and a continuum of Deep Time learning over our lifetimes.

DTL is not new. It has been practiced for decades in many settings at different levels and by different names — Montessori Cosmic Education, Universe Story, Journey of the Universe, Environmental Evolution, Big History, Deep History, Ignatian Pedagogy and others. (Please see a list of books below for references used in the development of these principles.) Our goals on the DTNetwork are to explore what is already being done in so many remarkable ways, connect different efforts in a continuum across all age levels, and evolve a comprehensive approach. What follows are principles, some or all of which are shared by those engaged in this approach to education.

Five principles in DTL are discussed below. In summary, they are:

1. CONTEXT

Orient to a vast evolving Universe.

2. MATRIX

Understand our embeddedness in the Earth.

3. INNER TRANSFORMATION¹

Experience inner growth and engagement through:

a. AWE & WONDER

Experience the larger whole.

b. CONNECTION

Bond with, and care deeply for, the larger whole.

c. IMAGINATION

Envision future possibilities.

d. REFLECTION and DISCERNMENT

Integrate understanding and experience for decision making.

e. PASSION, PLACE, and PURPOSE

Identify ourselves with—and *as*—the Cosmos evolving.

¹ Inner transformation here focuses on the human. Interiority/subjectivity is recognized as a principle dynamic of the whole and everything within the whole.

4. ACTION

Participate in evolution to create a vibrant world.

5. CONTINUUM

Link deep time learning across all stages of life.

In detail, each of these principles are:

1. CONTEXT²

Orient to a vast evolving Universe.³

An evolving universe as a foundational context for education has been practiced by some. For most of the global population, however, it is a radically new idea.

Rather than teaching subjects piecemeal, or in unrelated chunks or details without context, in DTE an evolving universe becomes the foundation, framework, and “connective tissue”⁴ for all subjects and levels.⁵

A goal of DTE is to nurture in students a discovery of their own identity and role in the larger context; thus orienting to the larger context is a crucial first step and on-going process throughout life.

² This pedagogy draws its inspiration from multiple sources. One is Ignatian Pedagogy which flows from Context to Experience to Reflection to Action to Evaluation. Orla Hazra’s paper, *Ignatian Pedagogy in an Evolutionary Universe*, listed in the bibliography, extends the understanding of context in Ignatian Pedagogy to the Universe.

³ *Ecology and Religion* by Mary Evelyn Tucker and John Grim explores cosmology as having four functions: orienting, grounding, nurturing and transforming. See bibliography below.

⁴ Description used by David Christian for Big History.

⁵ Montessori Cosmic Education was the first curriculum to take this approach starting in 1948.

DTE orients us to a Vast Evolving Universe by:

- *Exploring cosmologies (creation stories) and their value to cultures [It does so by exploring how cosmologies serve as a lens and unifying worldview, filtering what we see and shaping our concepts of the Universe, Earth, humans, relationships, and personal and cultural identities.]
- *Linking together physics, chemistry, geology, biology, anthropology and history into a single evidence-based narrative characterized by a sequence of thresholds leading to higher levels of complexity;⁶ and showing the distinction between evidence-based and other narratives.
- *Exploring how earlier sustained relationships are incorporated into more more complex ones over 14 billion years, thus connecting us to the beginning of the cosmos and to everything in it
- *Exploring artistic expressions of the grand narrative and their evocative power
- *Becoming present to emergence—transformation into the new—as a fundamental principle of our Universe. Knowing that our Universe is “unfinished” and that emergence is happening here and now.
- *Understanding patterns of emergence in the past that may serve as templates for understanding transformation underway now
- *Understanding the history of transformation of our Universe characterized by increasing differentiation, interiority and communion⁷
- *Understanding human identity as emerging inside of, integral to, and dependent upon, an evolving universe. Looking to the Universe as primary . . . in a metaphorical sense as “teacher” and “guide.”

⁶ Big History names eight thresholds of increasing complexity in the grand narrative of the Universe.

⁷ Differentiation, Interiority and Communion are terms used by Thomas Berry. Differentiation refers to the objective variety and uniqueness of everything. Interiority refers to an inner dimension that is also sometimes called *autopoiesis*, subjectivity, self determination, or consciousness. Communion refers to the embeddedness of everything within a web of relationships.

2. MATRIX

Understand Our Embeddedness in the Earth.

DTL makes a priority of understanding the primacy of the Earth as our matrix from which all life emerges/has emerged and on which life depends. There's a sense of urgency, that our future depends on this foundational understanding. Without this central understanding, creating a flourishing future will be far more difficult if not impossible.

DTL connects us with the Earth by:

- * Situating the Earth Story inside the larger narrative of the Cosmos
- * Restoring the central value of nature for its own sake
- * Attuning humans to the vibrant processes of Cosmos and Earth
- * Understanding Earth as an interdependent system and community in which all forms of life have emerged/emerge out of nested symbiotic relationships that are coupled to their environments⁸
- * Challenging concepts of identity by understanding that each thing can only be what it is in relationship to everything else
- * Understanding the value of balance and reciprocity, relational resonance, mutually enhancing relationships with others and the Earth as a whole⁹
- * Highlighting the value of experiencing and directly interacting with Nature
- * Engaging our bodies and senses in kinesthetic learning and problem solving that involve interaction with the physical world

⁸ Inspired by the work of Lynne Margulis, James Lovelock, Fritjof Capra and other systems thinkers.

⁹ See books by Thomas Berry, Brian Swimme, Mary Evelyn Tucker, and John Grim listed below.

3. TRANSFORMATION

Experience inner growth and intense engagement inside the whole.

Every individual is part of the flow of evolution: the culmination of 14 billion years of transformation; and each will contribute to the future of trajectory of evolution. DTE focuses on the personal growth and engagement of each student because:

1. it's the place where deep learning and fulfillment happens and can impact an individual's future
2. interiority, or inner experience,¹⁰ drives action and therefore the future of evolution.

A goal of DTL is to nurture a person toward greatest fulfillment and toward contributing to evolving the Universe. DTL recognizes that every individual passes through key defining moments during which life altering decisions are made based on inner experience and interpretations, therefore this third principle focuses on how students experience deep time such that it becomes integral to their identity. DTL provides a context and support, enabling students to see how they fit into, and contribute to, the larger arc of evolution. DTL recognizes the importance of bringing together inner experience with outer action.

In DTE, personal growth and engagement are nurtured through:

a. AWE and WONDER

Experiencing the larger whole.

DTL recognizes that inspiration is primary to education, leading to intense engagement, respect, humility, gratitude, connection, sense of purpose, compassion, cooperation, and caring about the future. In DTL, the interior engagement of the student is core, and more important than the acquisition of information.

Experiences of awe and wonder happen/derive naturally when we:

¹⁰ Interiority refers to inner experience and also might be called subjectivity, autopoiesis or consciousness. It is one of the three governing themes named by Thomas Berry: Differentiation, Interiority and Communion, suggesting that evolution moves forward with an increase in each of these governing themes.

- * Realize our *dependence* upon 1) a spectacular sequence of transformations that preceded the evolution of humans and 2) the Earth system and community and its vast array of relationships
- * Become present to the mystery of existence
- * Know who we are, where we come from, and our role inside the larger whole
- * Know that we make a difference and have something to contribute
- * Make the connection between the creativity in the Universe and our own creativity
- * Celebrate/experience ourselves as part of the larger whole through music, dance and the arts

b. CONNECTION

Bonding deeply with others and the larger whole.

Awe and wonder open the door to deeper levels of bonding and widening our circles of identity and compassion. We overcome feelings of separation, loss, and suffering, and know that we belong. We move from experiencing others and the Universe/Earth as objects to experiencing them as part of a field of subjectivity in which we are imbedded. We experience the Universe, as Thomas Berry said, as a “communion of subjects, not a collection of objects.”¹¹ Experiences of unity with the larger reality lead to caring for the whole and embracing our evolutionary destiny, thus more easily evolving the Universe/Earth toward a flourishing future. DTL believes that cultivating love (bonding and reverence) is of foundational importance for education and evolving the universe.

The kinds of experiences that foster bonding with the whole include:

- * Awe and wonder that lead to sustained fascination and absorption in a topic, an animal, friends, or project, in which the student bonds with the object of fascination
- * Working in a group, with nature, and creating art, in which personal identity expands
- * Experiences of playfulness which promote bonding, not as a “should,” but as a natural gravitational pull that draws us into joyful experiences of being alive

¹¹ Experiences of personal unity with the larger reality are described in all religious traditions.

- * Experiences of empathy and attentiveness in which we become aware of perspectives that are different from our own
- * Reading/showing through stories and research (depending on level) how collaboration works at all levels from physics to humans and leads to innovation (evolution) and deeper levels of personal satisfaction and quality of life; showing how surprise partnerships lead to the biggest leaps in evolution. Examples: formation of carbon, eukaryote/mitochondria partnership

c. **IMAGINATION**

Envisioning future possibilities.

Understanding our Context (an evolving Universe), connecting to our Matrix (Earth), and experiencing Awe and Wonder and Communion (Bonding) naturally ignites our imagination of future possibilities. DTE believes that human imagination is of huge importance not only for personal fulfillment but also for creating a vibrant future for our planet, and evolving the universe because imagination triggers emergence, the bringing forth of the new. As Maria Montessori said, “Human consciousness comes into the world as a flaming ball of imagination. Everything invented by man, physical or mental, is the fruit of someone’s imagination.”

DTE fosters imagination by:

- * Reading the Story of the Universe and showing how emergence happened in the past, and explaining that it is a natural cosmic process. Show how human imagination is part of the process of emergence and that human imagination is a powerful emergent force today.
- * Showing that the power of emergence is within each of us in its own unique expression that contributes to the whole.
- * Providing ample opportunities and environments for imagination to flourish. This may involve an unscripted natural process of wandering (mental and physical), experimenting, playing, experiencing delight . . . in groups and alone. It may also involve open ended assignments that lead to imagination and problem solving.
- * Creativity through artwork of all kinds, building things, writing, etc., are important to experiencing the delight of imagination followed by execution, and revision.

- * Showing role models of leaders before us who imagined future possibilities and then followed through, particularly those who made contributions that benefited the whole.
- * The Hero's Journey work of Joseph Campbell can be important here with discussions about what it means to be a hero, the stages of a hero's journey including experiences of disorientation and chaos. What carries the hero is his/her imagination, or vision of a future possibility.

d. REFLECTION and DISCERNMENT

Integrating understanding and experience for decision making.

In DTL, the reflective interiority of the student is of great importance for the student's personal fulfillment, and can impact evolution. There is an understanding that emergence exists in the Universe as a whole and that human interiority drives action.

- * Reflection is a process of integrating an understanding of context and matrix with personal transformation.
- * Discernment is a process developed in contemplative traditions, and cultivated in mindfulness and heart-based practices, for being fully present to what is emerging right now. Some practices involve deep listening in a meditative state and asking questions such as "What's dying away?" "What's trying to be born?"
- * Discernment can also be an intellectually rigorous process used for assessing different options with regard to: (1) their alignment with the processes of emergence and the three governing themes of differentiation, interiority and communion; and (2) the levels they benefit — planet, bio-region, community, family, individual.
- * Discernment can be used at individual and collective levels, and is now being used more widely in global networks for collective intention setting, thus creating fields of connectivity. There is a belief in DTL that human organization and collective intention setting itself is evolving and will influence our future.

e. PASSION, PLACE, and PURPOSE

Transforming into our deeper identities in an evolving Cosmos.

DTL recognizes that passion and yearnings for a sense of place and purpose are core human desires and belong in education. Orienting to an evolving Universe (context), grounding in the Earth community (matrix), experiencing awe and wonder, love, imagination, and reflecting and discerning work together to powerfully and naturally lead to passion for life and an understanding of place and purpose (or role).

- * We experience passion as a joy and zest for life that motivates, sustains and guides us. We see ourselves inside the greatest of all adventures, an evolving Universe.
- * We understand that chaos and destruction are elements key to transformation. This understanding enables individuals and communities to live more easily with uncertainty and pain.
- * We see humans not as alien beings in a vast universe but as part of a 14 billion year process of emergence; we see that we are embedded in, and draw nurturance from, the Cosmos and Earth communities.
- * DTL refers to Place as having two components—*time* and *space*. Regarding time, we ask questions such as: “Where are we in the deep time story?” “How is the deep time story inside of us?” We refer to space as relating to our geographic location, our local world—bioregion/culture/human communities/family—the surroundings within which we are embedded. There is a recognition in DTE that the one place where we can powerfully act is here and now with an understanding of the whole.
- * DTL recognizes that passion and a sense of place and purpose flowing out of context, matrix, experiences of awe and wonder, and love, can have profound therapeutic effects.
- * Recognizes that everyone is a valuable center in a multi-centered Universe.
- * The Universe/nature/humans/ourselves are inherently valuable, leading us to feel an innate excitement about, and inescapable responsibility for, making something valuable of our lives.
- * We transform our small selves into our greater selves as part of the flow of cosmic evolution, Earth’s ecosystems, and human societies.

4. ACTION

Participating in evolution to create a vibrant world.

DTE recognizes that an understanding of context; matrix; and inner transformation can lead to action that brings about emergence, thus evolving the Universe. Cosmology has two components: 1) an origin story and 2) a guide to action, or how to relate to others/Earth/Cosmos. This second component in cosmology is often called “right relationship.”

- * There is an understanding in DTL that a flourishing future depends on our cosmology—our understanding of our origin, and “right relationship” with Earth/Cosmos and each other. Most members of the Network would subscribe to the idea articulated by Thomas Berry that right relationship is one in which humans and Earth have a “mutually enhancing relationship.”
- * Action, in alignment with patterns of transformation that increase the three governing themes of differentiation (complexity), interiority and communion, will generally lead to better outcomes.
- * These governing themes are currently being explored by some Network members as a possible basis for judging right and wrong. If an action increases differentiation, interiority and communion, then it is good; if an action decreases differentiation, interiority and communion, then it is not good.
- * The Earth Charter principles¹², developed by a groups around the world provide a model of goals for action: 1) Respect and Care for the Community of Life, 2) Ecological Integrity, 3) Social and Economic Justice, 4) Democracy, Nonviolence, and Peace.¹³
- * Evaluation has to do with ongoing assessment of action in the light of context, matrix, and inner transformation.

¹² To learn more about the Earth Charter, go to https://en.wikipedia.org/wiki/Earth_Charter. To read the Earth Charter principles, go to http://www.unesco.org/education/tlsf/mods/theme_a/img/02_earthcharter.pdf

¹³ Montessori Cosmic and Peace Education has worked for peace inside an understanding of an evolving cosmos since 1948.

5. CONTINUUM

Continue deep time learning across all stages of life.

Deep Time Education works as a continuum across all levels, tied to stages of development over our lifetimes. It flows from level to level like a spiral moving toward expanding levels of understanding, experience, love and action.

DTL is a trans-disciplinary and interdisciplinary approach that passes from whole to detail, relating all subjects to the larger context of an evolving Universe and to each other. Narratives of the largest context, the Universe, are followed by successively nested narratives about — Life, Humans, Communication and Math.¹⁴

DTL recognizes different ways of learning, including discursive/analytical, intuitive, mystical, mimetic, kinesthetic and others; and seeks to acknowledge and include these multiple ways in and outside the classroom. DTL understands that education happens in all parts of life—family, school, community, work and recreation. (More to come on this.)

DTL is intergenerational in that each generation inherits a shared cosmology from the previous generation, incorporates new discoveries, and shares it with the next generation.

DTL is also inter-institutional, international, and inter-religious. (More about this to come.)

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For more suggested resources, go to:
www.dtnetwork.org

¹⁴ The Five Great Lessons (Stories) inside of Montessori Cosmic Education—Cosmos, Life, Human, Communication, Math—are an important model for this.

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